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ABSTRACT

This proceedings contains session topics: extension systems, extension programs, extension evaluation, program impacts, extension management, extension reform, experiential learning, program delivery, farming systems research, professional training and development, program strategies, teaching effectiveness, organizational leadership, extension programming, extension models and extension program evaluation. (CCM)

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ED 431 614

1999 Conference Proceedings

15th Annual Conference

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21, 22, 23, 24 March, 1999
Port of Spain, Trinidad

25, 26 March, 1999
Tobago

AIAEE

Association for International Agricultural and Extension Education

A professional association committed to strengthening agricultural and extension education programs and institutions in countries around the world

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1999 Annual Conference Concurrent Sessions

Monday, March 22, 1:00 - 3:00 p. m.

Session A	Extension Systems - St. *Ann's Room*
Session B	Extension Programs - *Cascade Room*
Session C	Extension Evaluation - *Laventille Room*
Session D	Program Impacts - *Maraval Room*

Tuesday, March 23, 9:00 - 11:00 a. m.

Session E	Extension Management - *St. Ann's Room*
Session F	Extension Reform - *Cascade Room*
Session G	Experiential Learning - *Maraval Room*
Session H	Program Delivery - *Laventille Room*

Tuesday, March 23, 1:00 - 3:00 p. m.

Session I	Farming Systems Research - St. Ann's Room
Session J	Professional Training and Development - *Cascade Room*
Session K	Program Strategies - *Laventille Room*
Session L	Teaching Effectiveness - *Maraval Room*

Tuesday, March 23, 3:30 - 5:30 p. m.

Session M	Organizational Leadership - *St. Ann's Room*
Session N	Extension Programming - *Cascade Room*
Session O	Extension Models - *Laventille Room*
Session P	Extension Program Evaluation - *Maraval Room*

Monday, March 22, 1999 5-9 p.m. POSTER SESSION

Glass Veranda/Breezeway

1999 Conference

Refereed Proceedings

15th Annual Conference

21, 22, 23, 24 March, 1999
Port of Spain, Trinidad

25, 26 March, 1999
Tobago

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Special Thanks

The membership of AIAEE wishes to express their appreciation to those who served as referees for the paper summaries submitted for the 1999 Annual Conference. Each of the paper summaries was judged and scored by a minimum of three peer reviewers. More than sixty-five papers and fourteen posters were accepted for inclusion in this publication.

This year, several Association members agreed to share the leadership roles in securing peer reviews for the paper and poster session abstracts, by assisting in securing referees and in the overall management of the review process. We wish to thank the following individuals for their excellent leadership throughout the review process.

Steve Jones
Layle Lawrence
James Christiansen
Matt Baker
David Acker
Jimmy Lindner
Roger Steele

We also wish to express our appreciation to the many Agricultural and Extension Education scholars who contributed greatly to the review process through their thorough and insightful reviews.

A special message of appreciation is expressed to those members who contributed to the scholarly activities of AIAEE by submitting proposals for papers or for posters. Your dedication to scholarship within the profession is commendable.

Grateful appreciation is extended to John Crunkilton for his leadership of the poster session, and to all of the other members who have responded so faithfully throughout the year as special leadership, assistance with handling proceedings, and other valuable inputs in the scholarly activities of the Association were needed. We also wish to thank David Dolly for his untiring efforts in providing the leadership in arranging the Caribbean portion of the conference.

We wish to thank all of those who are serving as session chairs and paper discussants at this year's conference. These critical roles have been readily accepted by those serving, and this dedication to scholarship provides even greater dimension and excellence for the activities of the association.

Perhaps the greatest volume of thanks and appreciation should be directed to Mary Ann Lofgren, my secretary, who has unselfishly provided vast amounts of energy and outstanding communication and organizational talents toward the scholarly activities of the Association throughout the paper/poster call to the final completion of the proceedings. She deserves a truly grateful expression of gratitude from all members for her dedication and excellence in assisting in the many duties of AIAEE.

John G. Richardson,
Chair, Scholarly Activities Committee

1999 AIAEE CONFERENCE REFEREED PAPERS

Session A Extension Systems

March 22, 1:00 - 3:00 p. m.

Session Chair - Roger Steele

Location: St. Ann's Room

TITLE: An Assessment of the Use of Contact Farmers in the Training and Visit System of Agricultural Extension in District Hyderabad Sindh Pakistan
AUTHOR: Zaheeruddin Mirani, Gary W. Leske, Aijaz Ali Khooharo
University of Minnesota, St. Paul, MN
DISCUSSANT: David Acker

TITLE: Comparative Analysis of the Chinese and Indian Extension Systems: An Analysis of Differences in Approach and Performance
AUTHOR: Burton E. Swanson
University of Illinois at Urbana-Champaign
DISCUSSANT: David Acker

TITLE: Development of an Information and Advisory Service in Russia and Ukraine
AUTHOR: Bradley J. Beeler
Columbus, Ohio
DISCUSSANT: Rakey Cole

TITLE: Agriculture for Tourism Purpose Extension System in Taiwan
AUTHOR: Chuang Shu-Tzu
National Taiwan University
DISCUSSANT: Rakey Cole

AN ASSESSEMENT OF THE USE OF CONTACT FARMERS IN THE TRAINING AND VISIT SYSTEM OF AGRICULTURAL EXTENSION IN DISTRICT HYDERABAD SINDH PAKISTAN

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A paper prepared for presentation at the AIAEE Conference,
Trinidad - Tobago, March 21-26 1999

AN ASSESSEMENT OF THE USE OF CONTACT FARMERS IN THE TRAINING AND VISIT SYSTEM OF AGRICULTURAL EXTENSION IN DISTRICT HYDERABAD SINDH PAKISTAN

ABSTRACT

This research work was carried out in District Hyderabad Sindh, Pakistan and was designed to assess the performance of contact farmers in the "Training and Visit" system of extension in disseminating new agricultural practices. The target population of this study consisted of all contact and non-contact farmers in District Hyderabad. A detailed questionnaire was developed and a survey method was employed to collect information through personal interviews. The most important finding was that contact farmers were significantly different from non-contact farmers in respect to their farm size, farm income, educational level, and use of new practices. However, they were effective in disseminating new agricultural practices among farming communities. Non-contact farmers perceived contact farmers either good or fair according to various aspects of their work. Contact farmers, radio and other farmers were considered as the most reliable sources of information. The major farm enterprise of the respondents was raising crops. Contact farmers were facing difficulties in disseminating new practices such as non-availability of good seeds and inputs at the proper time, and lack of credit facilities. From the information, it is concluded that contact farmers were performing their part of the duties and that the non-contact farmers perceived them as good or fair. They are useful in disseminating new agricultural practices among their circles of farmers.

Introduction

Agriculture is the mainstay of Pakistan's economy. It contributes a major share, not only by earning foreign exchange, but is also the main source of employment for Pakistan's people. Agriculture makes a major contribution to the country's Gross Domestic Product (GDP), accounting for more than 20% of the GDP and employs more than half of the country's total labor force (Barg, 1994). More than 70% of the country's population living in the rural areas largely depends upon agriculture. The prosperity of the country and its people lies in the development of agriculture. In spite of the vital role of agriculture in the economy, very little progress is being made in establishing Pakistan's agricultural industry. The country is not producing enough for its people. Many agricultural products such as edible oil, dairy products, and timber, have been imported from other countries (Amir Mohammad, 1983). Looking at this situation, there is a growing need to establish agriculture as a national priority.

While different allied agencies are rendering services for the development of agriculture, agricultural extension plays a vital role in the dissemination of new technology to the farmers and bringing farmers' problems to research centers for solutions. For the strengthening of agriculture, different projects are introduced in Pakistan from time to time. The "Training and Visit" (T & V) system of extension was introduced in 1980 to reorganize and strengthen extension activities. Before the introduction of T & V, the traditional extension system was in effect in the country. Under this system, extension activities suffered for many reasons. The ratio for field assistants to farmers was impractical; one field assistant covers more than 1000 farm families. In addition, there were no transport and resident facilities available for the field assistant. Equally problematic, the field staff was not trained enough to give advice to the farmers, there was a lack of single, direct line of technical support and administrative control, and there were no close ties between extension services and research institutions (Mallah, 1993).

With the introduction of T & V, the number of extension staff was increased. Each field assistant has to look after about 600 farm families, thus his area of jurisdiction decreased. For transport and residence, each field assistant has been provided a bicycle and a house near his working area. The number of supervising staff is also increased to make the program more effective. In addition, the system provides a single direct line of technical support and administrative control.

Dissemination of improved agricultural practices is one of the major challenges facing the field staff of extension. Farmers under the traditional extension services were not well informed about the changes occurring at the research centers. Under T & V, the field staff used different methods to popularize the adoption of improved agricultural practices such as improved seeds, fertilizers, pesticides and insecticides. These methods include demonstration plots, use of mass media (e.g., radio, TV), field days, and festivals.

Under the T & V system, contact farmers are the target audience to whom the messages are disseminated among the farming community. Through these farmers, extension personnel, in most cases field assistants, cover a large area of jurisdiction in a limited period of time. Because contact farmers are an important part of T & V system, best practice guidelines suggest that the selection of contact farmers should meet the criteria described by Benor, et. al. (1984). These guidelines indicated that contact farmers should represent the socio-economic conditions of the farming community of their group, they should be practicing farmers, accept and implement new practices on their part of land, encourage other farmers to observe, and explain these new practices to observing farmers.

The Problem

Contact farmers are the key T & V resources for persuading other farmers to adopt new practices. Therefore, the selection and use of contact farmers are very critical. Benor, et. al. (1984) have argued a specific criteria for the selection of contact farmers be established. For example, a contact farmer should be truly representative of his farming community. Omotayo and Arokoyo (1994), while conducting a study in Nigeria, found that contact farmers were representing a wide range of different categories of farmers. Their study revealed a significant difference in farm income and use of innovative knowledge between contact and non-contact farmers. In spite of the differences, the study revealed that the performance of contact farmers was perceived by non-contact farmers as either good or fair on various aspects of their work.

Although several studies have been conducted on the T & V system in Sindh, Pakistan, very few of them have focused on describing the characteristics of contact farmers and their effectiveness in the dissemination of new agricultural practices within their farming community. This study was therefore designed to determine the characteristics of contact farmers and to assess their performance in the dissemination of new practices under the T & V system in District Hyderabad, Sindh.

Purpose and Objectives of the Study

The primary purpose of this study was to identify the characteristics of contact and non-contact farmers in district Hyderabad Sindh and examine the usefulness of contact farmers in the dissemination of new practices under the T & V system of extension.

The specific objectives were to:

1) identify and describe the characteristics of contact and non-contact farmers,
2) examine the usefulness of contact farmers in disseminating new agricultural practices,
3) identify constraints in disseminating new agricultural practices as perceived by the contact farmers, and
4) identify the sources of information involved in the dissemination of innovation.

Methods and Data Sources

This research features a descriptive survey design. Descriptive research is a method that "involves making careful description of educational phenomena" (M. D. Gall, Borg, and J. P. Gall, 1996, p. 374). Leedy (1989) describes descriptive survey as a "normative survey." A detailed questionnaire was developed drawing heavily on the instrument designed by Omotayo, et. al. (1994). The questionnaire was than translated into Sindhi (local) language. The information was collected through personal interviews using the structured questionnaire. The data were collected during the year 1997-98. Because there were two groups, contact and non-contact farmers, the sample was divided into two homogenous groups and then a simple random sampling was done to select the sample from both groups; a process known as stratified sampling (McMillan, 1996). Because the groups were not equal in size, disproportional stratified sampling was performed. According to McMillan (1996), when groups are not equal in size, disproportional stratified sampling ensures that a sufficient number is selected from each group. One hundred twenty contact and 120 non-contact farmers were randomly drawn from the available lists and were specified as the samples. However, due to inaccessibility of the farmers, only 100 contact and 100 non-contact farmers were interviewed. This represents a total response rate of 83.33%. Eighty-three percent response rate, according to Wunsch (1986), is adequate if the sample size is more than hundred. He defines "adequate" as " a sufficient number have responded to make it possible to use the comparison (p. 33).

The data collected were tabulated and analyzed by using a computer software package SPSS/PC version 8.0. Statistical tests such as mean, percentage, t-test, and one- way ANOVA were employed to allow interpretations of the findings. The t-test was used to test the null-hypotheses that were related to the mean difference on the items related to farm income, farm size, use of new practices, and educational level. ANOVA was used to test the null-hypotheses related to the perception of contact and non-contact farmers regarding the informational sources. In addition, Duncan's Multiple Range Test (DMRT) was used to rank the informational sources.

Results

The results indicate that the contact farmers were chosen from the wealthier and more educated community members (see Table 1). They were significantly different from non-contact farmers with larger holdings (48% had more than 37 acres of land), greater farm income (84% had more than 45,000 rupees farm income), and tenure status (68% were landlords). This research also indicated that there was no such big difference in the use of new agricultural practices such as use of farm machinery, improved varieties of seed, fertilizer, and pesticide/insecticide between contact and non-contact farmers.

The study indicated that farmers acquire knowledge regarding new agricultural practices primarily from other farmers (75%) and/or from agricultural programs broadcast by radio (67%). The majority of farmers did not consider newspapers and magazines as good sources, perhaps because the illiteracy rate is high among farmers. The majority of the farmers were not familiar with the integrated pest management (IPM) practices since the idea of IPM has recently been introduced in the area. Slightly over half of the contact farmers were contacted by extension personnel once per month (52%), while 64% of non-contact farmers received less than one visit per month by extension personnel.

Usefulness of Contact Farmers

The study found that contact farmers were effective in disseminating new practices to non-contact farmers in District Hyderabad. Contact farmers were ranked first among other information sources by the non-contact farmers. In addition, the majority of the contact farmers are using new agricultural practices. The study further shows that non-contact farmers perceived contact farmers according to various aspects of their work as either good or fair (1 to 5 scale was used where 1 stands for very poor, 2 for poor, 3 for fair, 4 for good, and 5 for excellent).

Constraints Faced by Contact Farmers

One of the important objectives of the study was to identify constraints facing contact farmers while disseminating new agricultural practices to non-contact farmers. The study showed that contact farmers are facing difficulties in disseminating agricultural practices due to cost and non-availability of agricultural inputs, non-availability of credit, and adulterated inputs.

Perceived Sources of Information by Non-Contact and Contact Farmers

Non-contact farmers perceived other farmers, contact farmers, and radio as effective sources of information (see Table 3). The ANOVA for perceived information sources was significant ($p \leq .05$). Table 3 presents DMRT results. Other farmers, contact farmers and radio were ranked first. Pesticide/insecticide agents were ranked second, extension agents and TV were ranked third, and newspaper and magazines were ranked fourth. Contact farmers perceived radio as the most effective source of information. The ANOVA (Table 4) for perceived information sources was significant ($p \leq .05$). Table 5 presents DMRT results. Radio was ranked first, extension agents and other farmers were ranked second, TV and pesticide/insecticide agents were ranked third, and newspapers and magazines were ranked fourth.

Concluding Remarks

Selection of contact farmers is an important issue in the T & V system. In fact, several studies have been conducted to examine the use of contact farmers. These studies showed that the selection process had not met the criteria developed by Benor and Baxter (1984) (for example, Feder, et. al. (1984) and Omotayo, et. al. (1994).). This study also found that contact farmers were chosen from the wealthier and more educated families with higher social status in the community. The study found that the criteria for the selection of contact farmers does not appear to negatively affect their performance. There are many other factors affecting the role of contact farmers and their ability to diffuse information, such as adulterated seeds, non-availability of inputs, and lack of visits by extension personnel. This study found that the contact farmers were performing their duties satisfactorily since non-contact farmers perceived them as good or fair. Omotayo et. al. (1994) found similar results. However, the authors of this study found that contact farmers are facing difficulties in disseminating information. In addition, the researchers learned that 46% of the contact farmers received less than one visit per month from extension personnel, a problematic issue confronting the T & V system. In spite of these obstacles, contact farmers, radio, and other farmers were ranked first as sources of information by non-contact farmers, which illustrates their usefulness in T & V system of extension.

Educational Importance

This study reveals that even though contact farmers are not always representative of their socio-economic groups, their use can still be very fruitful and rewarding for both farmers and extension services. This study, therefore, has potential benefit as it helps decision makers in identifying the ideal characteristics of contact farmers, understanding the constraints that confront them, and suggesting recommendations to maximize their effectiveness under T & V system of extension.

Table 1. Mean[*] Farm Size, Income, and Educational Level

Variables	Mean		Mean diff.	T	p. value
	Contact	Non-Contact			
Farm Size	3.08	1.58	1.5	11.81	.00[**]
Farm Income	3.84	2.70	1.14	10.52	.00[**]
Educational Level	2.23	1.33	0.9	7.63	.00[**]

Table 2. ANOVA for Perceived Sources of Information by Non-Contact Farmers

	Sum of Squares	df	Mean Square	F	p. value
Between Groups	679.86	7	97.12	75.54	0.00[**]
Within Groups	1018.30	792	1.29		
Total	1698.15	799			

Table 3. Duncan's Multiple Range Test: Non-Contact Farmers' Ranking of Information Sources

Information Source	N	Subset for alpha = 0.05			
		X1	X2	X3	X4
Other Farmers	100	3.96			
Contact Farmers	100	3.69			
Radio	100	3.68			
Pesticide/insecticide Agents	100		3.12		
TV	100			2.76	
Extension Workers	100			2.68	
Magazines	100				1.45
Newspaper	100				1.40

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[*] The scale was 1 = v. poor, 2 = poor, 3 = fair, 4 = good, and 5 = excellent.

[**] P ≤ .01

Note: The ANOVA yielded an F value of 75.5 with p ≤ .01

Table 4. ANOVA Table for Perceived Sources of Information by Contact Farmers

	Sum of Squares	df	Mean Square	F	p. value
Between Groups	215.99	6	35.99	27.99	0.00**
Within Groups	891.44	693	1.29		
Total	1107.43	699			

Table 5. Duncan's Multiple Range Test: Contact Farmers' Ranking of Information Sources

Information Sources	N	Subset for alpha = 0.05			
		X1	X2	X3	X4
Radio	100	3.68			
Extension Workers	100		3.33		
Other Farmers	100		3.10		
TV	100			2.76	
Pesticide/insecticide Agents	100			2.73	
Magazines	100				2.23
Newspaper	100				1.97

Table 6. Perception* of Effectiveness of Contact Farmers by Non-Contact Farmers

Statements	Excellent		Good		Fair		Poor		V. Poor	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. Visiting other farmers' field regularly.	0	0.0	65	65.0	26	26.0	9	9.0	0	0.0
2. Allowing other farmers to visit his farm to observe application of recommended practices.	3	3.0	45	45.0	42	42.0	10	10.0	0	0.0
3. Methods of conducting farmer group meetings.	3	3.0	54	54.0	22	22.0	11	11.0	10	10.0
4. Conducting demonstration to other farmers on improved practices.	3	3.0	71	71.0	10	10.0	15	15.0	1	1.0
5. Explaining procedures for carrying out improved practices.	26	26.0	51	51.0	10	10.0	9	9.0	4	4.0
6. Giving fair treatment to all farmers.	7	7.0	37	37.0	51	51.0	4	4.0	1	1.0
7. Being careful and avoiding mistakes in explaining improved practices.	24	24.0	50	50.0	14	14.0	14	14.0	0	0.0
8. Knowledge of farming problems.	1	1.0	27	27.0	66	66.0	6	6.0	0	0.0
9. Correcting mistakes when improved practices applied wrongly.	26	26.0	53	53.0	17	17.0	4	4.0	0	0.0
10. Timeliness of calling group meetings to discuss production recommendations.	23	23.0	36	36.0	3	3.0	31	31.0	7	7.0
11. General performance of the contact farmers in disseminating innovation.	2	2.0	66	66.0	31	31.0	1	1.0	0	0.0

*These 11 items were taken from the study conducted by Omotayo, et al., (1994).

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Literature Cited

Amir Mohammad. (1983). Research and Development in Pakistan Agriculture. Pakistan: Pakistan Agriculture Research Council Islamabad.

Barg, G. S. (1994). Role of training and education in the development of agriculture. In H. M. Naqvi, & H. Jonathan (Eds.), National Conference on Agricultural Policies and Farmers in Pakistan (pp. 47-51). Peshawar: Pakistan Academy of Rural Development.

Benor, D. & Baxter, M. (1984). Training and Visit Extension. Washington, D.C., USA: The World Bank.

Feder, G. & Salde, R.H. (1984). Contact Farmer Selection and Extension Visits: The Training and Visit Extension System in Haryana, India. Quarterly Journal of International Agriculture. V-23 (1).

Gall, M.D., Borg, W.R., & Gall, J.P. (1996). Educational Research: An Introduction (6th Edition): USA: Longman Publishers.

Leedy, P. D. (1989). Practical Research; planning and design: 4th edition. New York, USA: Macmillan Publishing Company.

McMillan, J. H. (19960. Educational Research; Fundamental for the consumer. USA; Harper Collins College Publishers.

Omotayo, A. K. & Arokoyo, T. (1994). An Assessment of the Use of Contact Farmers in the Training and Visit Extension System in Nigeria: A Paper Presented in the Tenth Annual Meeting of the Association of International Agricultural and Extension Education. Arlington, Virginia.

Wunsch, D. R. (1986). Survey research determining sample size and representative response. Forum Feature: Action Research in Business Education. Business Education Forum V. 40 (5).

Comparative Analysis of the Chinese and Indian Extension Systems:

An Analysis of Differences in Approach and Performance

Burton E. Swanson[1]

Introduction

China and India have the largest extension systems in the world in terms of professional and technical staff. The Chinese agro-technical extension system (ATES) has an estimated 180,000 technical staff from the national to the township levels, plus about 500,000 farmer technicians at the village level. According to recent estimates, India has more than 100,000 technical personnel in its extension system (Swanson, Farner, and Bahal, 1990, p.210).

Although these two countries are at opposite ends of the political spectrum, both nations are in the process of transforming their agricultural extension and technology transfer systems to become more demand-driven and responsive to farmer needs. This paper (a) summarizes the salient characteristics of these two agricultural extension systems[2] since the 1950s, (b) compares and discusses differences in crop productivity as measured by wheat and rice yields, (c) compares the basic features of these two extension systems and their respective impact on crop productivity, and then (d) outlines important modifications being implemented within each country's extension system as they prepare for the early part of the 21st century.

Chinese Extension System

In function, agricultural extension in China dates back to the Han Dynasty (AD 25-200). However, the People's Republic of China initiated its current ATES in 1951. By 1954 55% of the counties had established an extension station; however, both the Great Leap Forward and the Cultural Revolution disrupted the development of the ATES (see Delman, J. 1991, p67-98). Because of the famine associated with the *Great Leap Forward*, there continues to be strong policy commitment to food security through the development and dissemination of locally useful agricultural technology, including heavy farmer involvement in testing new varieties and experimenting with crop management practices.

The basic extension structure to disseminate agricultural technology is organized around four technical stations (seed, soils and fertilizer, plant protection, and agro-technical extension). At the national, provincial, and prefecture levels, these four stations operate as separate units within the Department of Agriculture (DOA) at each respective level. However, at the county level, three of these functions (agro-technical or crop management, soils and fertility, and plant protection) are integrated within a County Agro-Technical Extension Center (CATEC). Seed production, once part of the DOA, is now being organized under newly created seed companies. Seed Stations will retain responsibility for regulation and quality control of the seed industry.

CATECs play a pivotal role within the extension system by integrating and refining location specific technology. Program activities carried out by CATECs include: a) testing and fine-tuning technical recommendations from research, b) providing soil testing and plant diagnostic services, and c) training, backstopping, and supervising the township-level extension staff. CATECs generally have between 25-50 technical staff members, but some stronger CATECs may have 60-75 staff members. The agricultural training of CATEC staff ranges from the secondary to the post-graduate level, however, the majority of staff hold either a three-year agriculture college diploma or a university degree in agricultural science. The county government through the Bureau of Agriculture finances both staff salaries and the basic operational costs of CATECs[3]. Extension program activities are funded in large part based on proposals submitted by the CATEC staff to the Science and Technology Commission within each county. This funding mechanism helps ensure that program activities address local problems and priorities.

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[1] Burton E. Swanson is Professor and INTERPAKS Program Leader, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign.

[2] Since crop and livestock extension programs are organized separately in both countries, this paper will be limited to an analysis of the crop extension system.

Township Agro-Technical Extension Stations (TATES) are responsible for organizing front-line extension activities within villages. TATES are bifurcated into two functions: extension activities and Commercialized Agricultural Services (CAS). Typically there are one or two extension staff, with either an agricultural high school diploma or a 3-year agricultural college qualification, who are responsible for managing the TATES and for carrying out farmer training, advisory and on-farm demonstration work. These TATES staff members, whose salaries are paid directly by the township government, also provide guidance and support for farmer technicians[4] and demonstration households who are located within each village. The salaries of the remaining 1-5 TATES staff members are paid from profits generated from CAS. These CAS technicians, who have comparable training to the regular extension staff, provide technical advice and diagnostic services to individual farmers in conjunction with the sale of inputs (seed, fertilizer, and agro-chemicals). Given the policy decision that governmental offices become more financially self-sufficient, CAS profits are now being used to finance extension activities.

The Chinese ATES utilizes many different extension methods and techniques to disseminate agricultural knowledge, technology, and information, including:

- Farmer training that targets farmer technicians and demonstration households,
- Large-scale plots and field days that demonstrate recommended technologies,
- Extension fact sheets that are distributed through TATES input supply centers, and during farmer training courses and extension field days,
- Radio, TV and the village broadcast system alert farmers about new technologies, emerging problems, or to disseminate other types of timely information,
- Village blackboards provide farmers with details about recommended crop management practices throughout the growing season, and
- Farmer technicians and demonstration households within each village are available to provide follow-up instruction and/or answer specific farmer questions.

In the past decade, as specialized households have become common, these farm households have organized into different types of farm organizations (FOs), especially commodity groups and input supply and marketing cooperatives. These FOs have facilitated the dissemination of specialized agricultural technology as farmers work together to solve common problems and improve access to input supply and marketing services. It is estimated that there are well over 100,000 farmer organizations in the country and these numbers are increasing rapidly.

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[3] Each level of government finances the salary and operational costs of its respective level of the ATES resulting in a largely decentralized extension system.

[4] Farmer technicians are progressive farmers who receive a small stipend to provide part-time advisory work to other farmers within their village.

Indian Extension System

Following independence in 1947, the Indian extension system concentrated on rural community development objectives, rather than having a strong agricultural focus. However, during the food crisis of the 1960's, the government initiated several major agricultural development projects, such as the Intensive Agricultural District Programme (IADP) and the development of farmer training centers. During this same period, Green Revolution wheat and rice varieties were being tested throughout the country and in 1966 the Government of India imported 18,000 tons of high-yielding wheat seed from Mexico (Kohli, 1971, p. 149). Given the urgency of this food crisis, the program focus of Gram Sevaks or Village Level Workers (VLWs) gave more emphasis to agricultural extension. Also, during this period the Department of Agriculture, along with the other line departments such as Animal Husbandry, became heavily involved in the distribution and sale of agricultural inputs and services. Although the high yielding wheat and rice varieties had an immediate effect on yields, the lack of attention by both research and extension to the concomitant management practices limited the overall impact.

The training and visit (T&V) extension system was first introduced into in India during 1974 through a World Bank irrigation project. Given its focus on crop management practices, it had an immediate impact on wheat and rice yields. Consequently, this extension approach was adopted throughout the country during the following decade (Cernea, 1981, p. 227). The T&V approach, including its management system and extension methodologies, is fully described in the literature (see Benor and Baxter, 1984), therefore, these features will not be summarized here. However, implementing T&V extension largely completed the transformation of the Indian agricultural extension system from a community development agency to one that concentrated on technology transfer, especially for staple food crops.

Although the extension management system changed under T&V, the basic structure of extension at the district, block and village levels changed very little. At the district level there was a district extension officer (DEO), 3-4 subject matter specialists (SMSs), plus other support staff[5]. Agricultural extension officers (AEOs) were assigned at the block level to supervise village extension workers (VEWs). Under T&V projects, most states added large numbers of VEWs to achieve the recommended ratio of 1 VEW for approximately 800 farm households who would constitute an extension circle. During the 1970s and 1980s, most of these VEWs were secondary school graduates who received in-service training provided under the World Bank financed project. In the past decade, most new VEWs are university graduates. Since SMS positions are filled on the basis of seniority, the technical expertise of this cadre remains weak.

When T&V projects were being implemented during the 1970s and 1980s, these projects generally financed the salaries of the new staff, especially the expanding VEW cadre, plus most program, travel, and operational costs associated with the T&V approach. Once these projects were completed, then these additional salary costs shifted to the respective state government. At this point, due to the lack of financial resources, in-service training programs and the regular schedule of fortnightly visits collapsed in most states. Therefore during the 1990s, extension's operating budget shrank to about 10% of recurrent costs, with the program budget being primarily financed through central government central projects and schemes.

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[5] In large districts, there may be an additional administrative level called the subdivision. The staffing pattern for subdivisions mirrored the staffing arrangements at the district level.

Comparative Analysis of Factors Affecting Differences in Agricultural Productivity

Wheat and rice yields are used in this paper as a comparable measure of agricultural productivity. The reason for comparing the yields of these two staple crops over time is that both countries had similar access to the Green Revolution varieties. As illustrated in Figures 1 and 2, wheat and rice yields have increased substantially in both countries, but there are important difference that merit attention. To provide a context for comparison, comparable data has also been included for the United States, plus average yields worldwide. At the outset it should be noted that many factors affect agricultural productivity and it is beyond the scope of this paper to determine the relative impact of these different factors on crop yields. However, important factors that have affected crop yields in both countries will be explored and discussed.

Figure 1: Wheat Yields from 1961-1998
(Tons/Hectare)

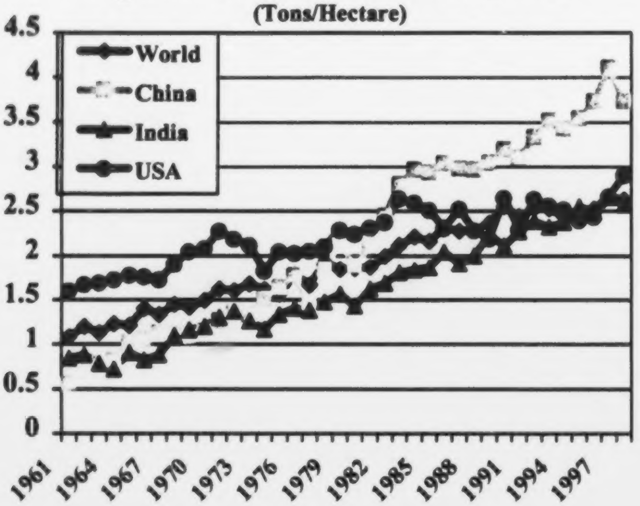
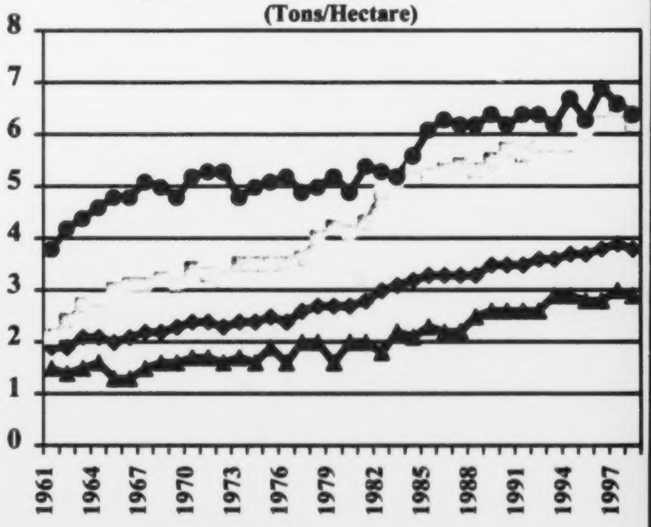


Figure 2: Rice Yields from 1961-1998
(Tons/Hectare)



Differences in wheat and rice productivity will be analyzed first. Using 5 year running averages, from 1961 through 1998, wheat yields increased 5.5% annually in India as contrasted with 10.2% in China. During the 1961-65 period, average wheat yields were about 8% less in China as compared with India, but by 1994-98 China's average wheat yields were 46% higher than average yields in India. In the case of rice, China's yields were about 78% higher than India's yields during the early 1960s and were about 113% higher during the 1994-98 period. Because both countries had relatively higher rice yields in the early 1960s (in comparison with wheat), their annual rate of increase was only 3.7% for China and 2.6% for India

One important factor that helps explain the substantial yield differences between India and China is the average amount of fertilizer used per hectare. As shown in Figure 3, during 1994-98 Chinese farmers used, on average, 252 Kg of fertilizer/Ha as contrasted with 82 Kg/Ha for Indian farmers. In other words, Chinese farmers were using about 3 times more fertilizer/hectare than Indian farmers. Given that high yielding wheat and rice varieties are very responsive to fertilizer, these differences in fertilizer use appear to be most important in explaining the yield differences that are summarized in Figures 1 and 2.

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Irrigation is another factor that might help explain differences in productivity. Figure 4 documents the percentage of arable land in both countries that is irrigated during this same time period. As shown in this table, China increased the amount of irrigated land from 30% to 40% between 1961 and 1996, while the percentage of irrigated land in India increased from about 15% to 35% during this same period. Consequently, low cereal yields in India during the early 1960s might be partially explained by the lack of irrigation, but by the mid-1990s these differences had narrowed considerable. In addition, paddy rice, by definition is grown under irrigated conditions. On the other hand, wheat in India is primarily grown under irrigated conditions, while much of wheat production in China is grown under rainfed conditions.

Figure 3: Total Fertilizer Used on Arable Land
(Kilograms/Hectare)

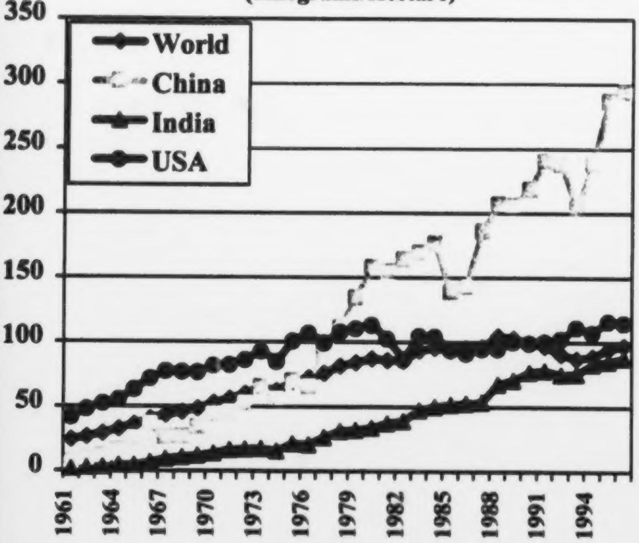
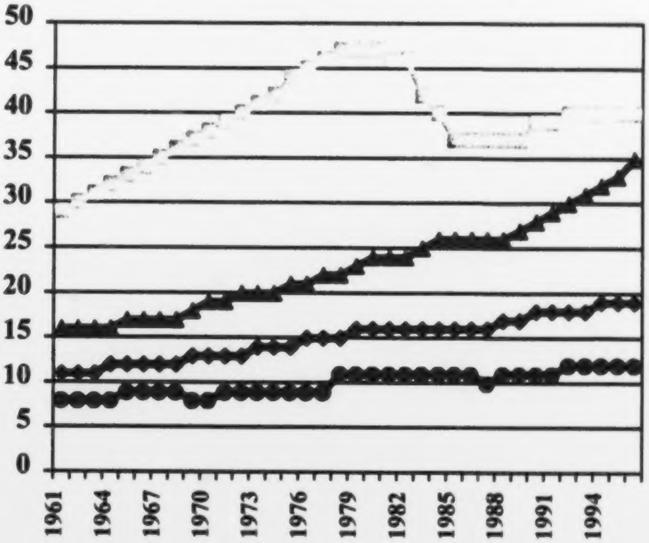


Figure 4: Percentage of Arable Land Irrigated



There are also political, socio-cultural, and economic factors that might help explain differences in crop productivity. For example, price policy to support increases in agricultural productivity was generally more positive in India than in China during this period (see: Xi-ji, 1989, p. 18-25 and Vyas, 1989, p.29-44). However, with China's policy shift away from collective farm management to the household responsibility system in 1979, followed by the transition to the *socialist* market economy in the mid-1980s, Chinese farmers have had increasing latitude to respond directly to market signals during the past 15 years.

Shortly after independence in the late 1940s, both nations undertook major land reforms. In India, farmers received fee simple land titles, while in China land was nationalized and farmers organized into communes (see Runsheng, 1989). Again, it was not until the household responsibility system was adopted (1979), that Chinese farmers were able to take more complete control over their land and to make management decisions that would maximize income.

There are also important socio-cultural differences between the two countries that may help explain differences in agricultural productivity. For example in China, the implementation of collective ownership, the communal production system, and the socio-economic disruptions of the Cultural Revolution left most Chinese peasants with similar financial and physical resources when the household responsibility system was enacted. On the other hand, India's socio-cultural caste system remains largely intact—a system that ascribes one's occupational and socio-cultural

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status within a community. Therefore, there are significant differences among Indian farm households—socio-economic factors that influence decision-making, the role of women, and access to resources, including technology.

Another important difference between India and China concerns their respective industrial development strategy. India followed the Russian model of major, capital intensive, heavy industry, while China pursued a more decentralized policy that emphasized village and township industries. The Chinese approach was designed to minimize rural-urban migration and reflected the lack of road and rail infrastructure within the country. However, the net effect was that most rural households in China have access to off-farm employment and additional income streams, opportunities that are not possible in India.

Also in China, both the husband and wife are engaged either full or part-time in off-farm employment. For example, based on average farm size in both countries[6], it is estimated that the average Chinese farmer is currently able to utilize or absorb about 120 days of labor per year in farming. Most of these farmers and their spouses utilize the remainder of their time in off-farm employment. In India, where farm size is slightly larger, the average farmer effectively utilizes about 180-work days/year in farming, but the family's potential for off-farm employment is very low. In addition, for socio-cultural reasons, few Indian women are engaged in off-farm employment.

Income from off-farm employment has been instrumental in increasing the access of Chinese farmers to improved agricultural technology. First, off-farm earnings have provided the capital to increase fertilizer use to relatively high levels (about 300Kg/Ha in 1998). Second, as soon as Chinese farmers secure sufficient capital, they purchase a small-scale, multipurpose tractor. When these tractors are not being used on the farm, they are used throughout the year for transporting construction materials. Therefore, tractors increase labor-use efficiency within agriculture and also provide an alternate, but highly complementary form of off-farm employment. Therefore, the combination of high fertilizer use and small-scale mechanization has increased the productivity of both land and labor resources in Chinese agriculture.

Another important difference between Indian and Chinese farmers and rural households is their literacy level and access to primary education. For example, in 1990 adult male and female literacy in China was 87% and 67%, respectively, while in India the comparable figures were 62% and 34%. These difference in adult literacy affect the capacity of farm households to access and use technical information in making management decisions. Although nearly all children in both countries currently attend primary school, between 1980 and 1993 the primary teacher-student ratio has improved from 1:27 to 1:22 in China, while during this same period this ratio declined from 1:55 to 1: 64 in India. Consequently, human resource capacity can be expected to increase more rapidly in the future in rural China than in rural India. These differences will impact the effectiveness of extension in disseminating improved technology as well as the capacity of rural households to engage in more highly skilled off-farm employment.

Comparative Analysis of the Indian and Chinese Extension Systems

In the preceding section, differences in the relative productivity of Chinese and Indian agriculture were documented and discussed. There are also specific structural, resource, and policy differences between these two national extension systems that contribute to overall productivity differences. Some of the major system differences include the following factors:

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[6] It is estimated that China and India, respectively, had 0.36 and 1.0 Ha/economically active population in agriculture (EAPA) in 1960, but that these numbers had narrowed to 0.24 and 0.71 ha/EAPA by 1990 (FAOSTAT).

a) Extension agent—farmer ratio. In India this ratio is estimated at 1:2,000 in contrast with a ratio of about 1:2,750 in China[7]. But China has an additional 500,000 part-time farmer technicians (1:1,000), plus a larger number of demonstration and specialized farm households that help disseminate improved agricultural technology.

b) Subject Matter Specialists (SMSs). Most CATECs in China have a permanent technical staff of 20-30 SMSs in crop management, plant protection, and soils & fertility. These SMSs are responsible for refining technical recommendations, and then training and backstopping the township extension staff in carrying out extension programs. Most districts in India have fewer than 10 SMSs and these positions are viewed as stepping stones in the career ladder rather than permanent technical posts.

c) Extension Methods and Techniques. As noted earlier, China uses a wide variety of individual, group and mass media techniques to disseminate improved technology to farmers. Over the past two decades, India has relied on the T&V approach involving fortnightly visits to groups of contact farmers within each village. However, with the completion of T&V projects in the early 1990s, both VEW training and fortnightly visits have been largely discontinued due to the lack of operating funds.

d) Program Development and Financing. Each level of government within China finances its own respective level of the extension system. This arrangement results in both decentralized decision-making and local accountability to stakeholders. In India, the state government finances most extension salaries and basic operating costs, but nearly all program funds come from the central government. These funds come in the form of special projects, frequently involving the demonstration or distribution of subsidized inputs. Therefore, program decisions are largely centralized with little accountability to local farmers and other stakeholders.

e) Extension Mission. Emerging from the loss of nearly 30 million people between 1958-61, due to a combination of drought and the *Great Leap Forward* (Kutzner, 1991. P.72), the Chinese ATES has developed technical capacity to support a technology transfer mission aimed at achieving food security. Following the food crisis in India during the 1960s and the introduction of T&V extension in the mid-1970s, technology transfer has also played an increasingly important role in the Indian extension system. At the same time, however, the technical capacity of the Indian extension system has never been particularly strong, both in terms of the SMS and VEW cadres. In the future, VEWs will be assigned to work under the local Panchayat or village-level government; therefore, they will likely become more general-purpose VEWs, as was the case under the community development extension.

Extension Strategies for the 21st Century

A primary goal of most governments is how to reduce public investment in agricultural extension while maintaining food security. Both China and India are reducing their public investment in agricultural extension, but their respective strategies are different.

In China, the Ministry of Agriculture is being downsized at all levels of government, but the government plans to maintain a strong ATES. However, all governmental units, including research and extension, are expected to become more financially self-sufficient by engaging in Commercialized Agricultural Services (CAS). As noted earlier, in the case of extension, these

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[7] These ratios have been computed on the basis of the number of economic active population in agriculture in 1990 (FAOSTAT) and the estimated number of extension workers in each national system in 1990.

CASs involve the sale of production inputs, with the profits being used to finance both extension staff salaries and program activities. In many respects this arrangement is similar to private sector firms in the U.S. who provide technical advisory services to those farmers who buy their purchased inputs from these firms.

India, on the other hand, is in the process of privatizing its input supply system to improve farmer access to purchased inputs and to create a more efficient input supply system. At the same time, it is recognized that salaries for the large number of extension staff that were added during T&V projects have tied up all available operating funds. The only way of making more program funds available to support extension program activities is through staff reduction. Therefore, India can be expected to reduce its VEW cadre as the older, poorer trained, extension staff members leave the extension system through normal attrition. In the process, the Indian extension system will likely shift its attention to pressing natural resource management problems, such as soil and water conservation and integrated pest management, while leaving the task of transferring crop management technologies to private sector dealers.

Another means of shifting extension costs to farmers is by helping them organize into farmer groups and associations. Commodity-based FOs are an effective and efficient mechanism for technology transfer, especially for cash crops. As a result, fewer numbers of well-trained extension staff are needed to assist these groups of farmers. Consequently, both India and China are giving priority to farmer organizations. However, given the number of FOs already established, China is probably a decade ahead of India in implementing this technology transfer mechanism.

All of these trends can be expected to make extension and the overall technology transfer system more demand-driven and responsive to farmer needs. Organizing farmers empowers them and allows farmers to more effectively articulate their problems and needs to the research-extension system. Privatizing the input supply system increases its efficiency as well as farmer access to improved technology. Finally, India is experimenting with a new organizational mechanism that will decentralize decision-making to the district and block levels and, thereby, increase the extension staff's accountability to local stakeholders. If this model is successful, then program development will become more "bottom-up" and responsive to local needs.

In summary, both India and China face major problems in maintaining food security while maintaining their respective natural resource base in the 21st century. India has considerable scope to increase its agricultural productivity, but it faces major natural resource and socio-economic constraints that will make it difficult to maintain food security in light of its continuing population growth rate. China, on the other hand, has been relatively successful in increasing its agricultural productivity and reducing its population growth rate, but it too is facing major natural resource constraints that will make future productivity increases both difficult and costly to achieve.

References:

Benor, D. and Baxter, M. 1984. *Training and Visit Extension*. Washington, D.C.: The World Bank.

Cernea, M. 1981. Sociological dimensions of extension organization: The introduction of the T&V System in India. In Crouch, B.R. and Chamala, S. *Extension Educational and Rural Development*. Volume 2: International Experience in Strategies for Planned Change". New York: John Wiley & Sons.

Delman, J. 1991. *Agricultural Extension in Renshou County, China*. Aarhus, Denmark: Institute of East Asian Studies.

FAOSTAT. 1998. *FAOSTAT Statistical Database*: Agricultural Database (Rome: Food and Agriculture Organization of the United Nations.

Kohli, S. P. 1971. "The all-India coordinated wheat improvement project" in Moseman, A.H. (ed.) *National Agricultural Research Systems in Asia.* New York: The Agricultural Development Council, Inc.

Kumar, L.S.S, Aggarwala, A.C., Arakeri, H.R., Kamath, M.G. and Moore, E.N. 1963. *Agriculture in India*: Vol. I. New Delhi: Asia Publishing House.

Kutzner, P.L. 1991. *World Hunger: A Reference Handbook*. Santa Barbara: ABC-CLIO, Inc.

Poostchi, I. 1986. *Rural Development and the Developing Countries*. Oshawa, Canada: Alger Press.

Runsheng, Du. 1987. "Advancing Amidst Reform", in Longworth, J.W. (ed.) *China's Rural Development Miracle*. St. Lucia, Queensland: University of Queensland Press.

Swanson, B.E., Farner, B.J. and Bahal R. (eds.). 1990. *International Directory of Agricultural Extension Organizations*. Rome: Food and Agriculture Organization of the United Nations.

World Bank. 1997. *World Development Indicators*. Washington, D.C.: The World Bank.

World Resources Institute. 1998. *World Resources 1998-99*. New York: Oxford University Press.

Vyas, V.S. 1989. "India's rural development strategies: Lessons in agricultural growth and poverty alleviation," in Longworth, J.W. (ed.) *China's Rural Development Miracle*. St. Lucia, Queensland: University of Queensland Press.

Xi-ji, A. 1989. "The Development and improvement of agricultural marketing in China," in Longworth, J.W. (ed.) *China's Rural Development Miracle*. St. Lucia, Queensland: University of Queensland Press.

DEVELOPMENT OF AN INFORMATION AND ADVISORY SERVICE IN RUSSIA AND UKRAINE

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Abstract

Extension development in Russia and Ukraine is proceeding at a slow rate. The historical precedence of a command structured agricultural economy is making the recognition of the importance of private sector agriculture politically difficult. However, a private sector is developing and is demanding access to agricultural information and education. In response to this demand both Russia and Ukraine, with the assistance of western aide providers including USDA, are attempting to develop an extension service. There is strong competition between Russian and Ukrainian universities and miniseries for control of extension development, each directing efforts toward different components. To succeed, a joint effort will need to develop between universities and miniseries to assess client needs. From the list of needs, each group will need to identify those services it is best able to provide based on political and financial constraints. The focus of extension should be on educational programs addressing management issues relating to the needs of the private agricultural sector. Before this can be accomplished recognizing the need for a diverse agricultural base, one including both the collective and private agricultural systems, will need to occur and should be the primary focus of western aide providers. Western aide will continue to play a strong role in the development of the Russian and Ukrainian systems. The benefit to aide providers lies in assisting to prevent the total collapse of the Russian and Ukrainian agricultural systems.

Introduction

The USSR, until its fall in 1991, was a mixture of diverse ethnic cultures spread over vast areas. The mixture of a Federation, autonomous republics and autonomous regions presented the central government with the challenge of combining the peoples and resources in an effort to meet the political and social needs of the country.

In their early history, conflicts prohibited any one group from providing a cohesive ruling body. In 862 the Russian Slav tribes invited Scandinavians, the Riurik brothers, to rule their lands in exchange for some semblance of order (Freeze, 1997, pp.3-4). The three brothers divided the Russian lands and imposed a severe and brutal form of leadership. Throughout history, individuals and groups have continued this "leading by domination" style.

In the early 1900's the Russian peoples, lead by the philosophies of Marx, Engels and Lenin, changed leadership style to one based on the needs of the "working class." The 1917 revolution placed in charge of the country's destiny, a form of government that existed until its fall in 1991. The government has gone through many transformations but has basically remained a centrally-planned command economy.

Josef Stalin, Lenin's protégée, controlled Russia's destiny as Dictator from 1929 until his death in 1953 (Compton's Online, 1997). Stalin was the developer of the USSR's centrally planned 5-Year Plans. His first 5-Year Plan called for the industrialization of the country and focused on the production of machinery and farm equipment, at the expense of clothing and household goods. Stalin wanted to collectivize agriculture to increase production and end private farming. He also wanted the control of farms transferred to the government.

The *kulaks,* successful private farmers, were forced to give up all their holdings and join a collective farm (*kolkhozy*). Many refused and were either exiled or assassinated. The Central Committee of the Communist Party passed a resolution in January 1930 moving from a policy of "limiting the exploitative tendencies of the kulaks to a policy of liquidating the kulaks as a class..." (Martens, 1995, pp138-139)

Stalin's collectivization process caused widespread resistance by the peasant class. Although the resistance was crushed, through assassination or exile, starvation followed the process (Davies, 1985, 4-5). The kulak opposition to collectivization led to the slaughtering of their cattle and horses, assassination of officials and burning the property of collectives, including crops and seed grains. The effect was widespread famine, the harvest failure of 1933 alone cost millions of lives.

The collectivization process, instituted by Stalin but carried out by Soviet leaders to the present, was a policy totally dependent on state control. The Central Committee determined the countries agricultural needs, often based on its political needs. *Gosplan*, the country's central planning agency, converted the political policy into a plan which was handed down through the system to the collectives. Each collective received its production quotas, supplies, equipment, financing, marketing and management directives, all provided by the state. Information on all aspects of production was also controlled by the state leaving little initiative in the hands of the farm managers and operators.

This system of agricultural production led to monumental wastes and inefficiencies. The Soviet policy of *everything belonging to everyone* left no one in charge or responsible. Theft of supplies and products was rampant. Inefficiencies were covered by additional expenditures from state coffers.

The system lead to one of access to information and resources based on political and personal connections. Collective farm managers who were part of the party apparatus received the largest allocations of resources, the latest technology and had the greatest access to information. Those who were less well connected had to depend on a locally and individually established barter system to obtain inputs and were frequently unable to meet established quotas.

By 1985 Mikhail Gorbachev came into power as the General Secretary of the Communist Party (1985-1991) and a member of the Presidium of the Supreme Soviet of the USSR (1985-1990, President 1989-1990). In 1990 Gorbachev further solidified his power becoming President of the USSR. Gorbachev was born March 2, 1931 during the starvation of the Russian people created by Stalin's collectivization policy, a legacy which guided his agricultural policy (Boldin, 1994).

Gorbachev's policy was one of decentralizing the rigid Soviet economy with its monopolistic central command system. Gorbachev planned on doing this by giving people an opportunity to start their own business. They would be able to choose their own manager and make their own profit, but they would have to pay their own way. This plan had one obvious flaw; the state planning bodies still controlled what the product would be, what it would be sold at and how it should compensate for its work force.

Under Gorbachev's policies of *perestroika* (a term adopted to designate a fundamental reform in the Soviet system from the mid-1980's) and *glasnost* (a reference to the relaxation of censorship controls in the 1850's and again in the late 1980's) the economy became worse. The decentralization policy, often subverted by hard line communists, ultimately led to his downfall. Boris Yeltsin emerged as the post Soviet Union leader and President of Russia. Yeltsin was committed to market reforms and in 1992 Yeltsin, along with Yegor Gaidar, Head of the new Cabinet and Anatoly Chubasis, former Deputy Mayor of Saint Petersburg started the privatization process of Russian firms. Chubasis was appointed to run the State Committee on the Management of State Property, the modern government organization responsible for the privatization process (Beeler, 1998).

The privatization process was carried out through all levels of Russian industry, including agriculture. The large collective farms were divided among the collective's members. In theory each member was to gain access to a portion of the collective's assets (machinery, livestock, land) through a controlled voucher program. Although all assets were theoretically distributed, actual control remained in the hands of the former party selected Directors. Later attempts at privatizing the former collectives included distribution of land titles however, the new title holders have had little success in acquiring actual control over the assets and if so, have little ability of managing their interests in a viable economic unit (Csaki and Lerman, 1997).

Since the breakup of the USSR in December 1991 many western organizations have attempted to assist the Former Soviet Union (FSU) rebuild its agricultural capabilities based on private ownership. The United States Agency for International Development (USAID) has funded projects throughout the FSU which are aimed at assisting the region develop a privately managed agricultural base. Several private contractors; Center for Citizen Initiatives (CCI), Citizens Network for Foreign Affairs (CNFA) and Chemonics International, have received USAID funding to develop agricultural programs in the FSU and Ukraine. The United States Department of Agriculture (USDA) has also conducted multi year programs on private agricultural development in both Russia and Ukraine. Other governments, including; England (The British Know How Fund), Sweden, France, Germany, the European Union (TACIS) and world organizations; World Bank (through ARIS), International Monetary Fund and the European Bank for Reconstruction have provided substantial funds and personnel for agricultural development. A number of philanthropic organizations (Eurasia Fund, ACDI/VOCA, Winrock International) are also providing services to enhance agricultural development.

A primary focus in many projects, supported by government agencies, has been assistance in the form of technology. This has been, and is, consistent with aide provider policies as it offers the potential of leading to sales of western manufactured goods. However, a difficulty in this policy is recognized, this policy does not address the need for providing the management expertise to the newly developing agricultural enterprises who do not receive management input from the central planning governmental agencies. The management expertise has to be provided through access to information and training not readily available through the existing structures. This need for information and training is one provided in many countries through the extension service.

The USDA Russian-American Farm Privatization Project (RAFPP)

In 1991 a meeting between then US Secretary of Agriculture Edward R. Madigan and former St. Petersburg mayor Anatoly Sobchek lead to a bilateral agreement to assist Leningrad Oblast in the development of an US style farm. This research and demonstration farm would demonstrate US agricultural production and management techniques to the Oblast's developing private agricultural sector.

Project development and management was provided by USDA Cooperative State Research, Education, and Extension Service (CSREES) and was initiated by a cooperative agreement with the Leningrad Oblast Ministry of Agriculture (MOA). The initial project (1992-1995) focused on the creation of a research and demonstration farm 100 km east of St. Petersburg providing technical, financial and training support to 21 selected private farmers.

Although the initial interest of the MOA was in obtaining technology (seeds, genetics, and machinery) it became apparent that the farmers had little or no access to information or training. As a result of this deficiency the Oblast administration, with USDA assistance and as part of the World Bank ARIS project, formed an Information and Advisory Service (I&AS). (Note: I&AS is a term used in Russia and Ukraine and is synonymous with Extension Service)

The I&AS was organized as a department within the MOA to gather production, input supplier and marketing information. The information was to be added to a computer data base and provided to subscribers. In addition, the newly formed I&AS was responsible for developing, printing and disseminating informational bulletins for agriculture.

The I&AS recognized its inability to provide services because of a lack of experience and funding. The RAFPP assisted in the development of the I&AS by providing equipment and personnel support. The personnel, faculty and extension service personnel from US Land Grant Universities, assisted in developing an organizational structure, trained I&AS personnel in extension methods and formed a unique Business and Strategic Planning and Management Center (BSPMC).

The BSPMC was the mechanism used by the MOA to assist private farmers improve their management capabilities allowing them to operate in a private agricultural community. The BSPMC conducted educational programs on business and financial planning, provided individual consultations to farmers and assisted farmers identify potential credit sources.

Competing I&AS's were simultaneously being developed by educational institutions; St. Petersburg State Agrarian University (SPSAU) and the Academy of Agribusiness Management.

The SPSAU attempted to develop an alternative to the government controlled I&AS based on the US model of university administration and implementation. The Academy of Agribusiness Management, selected and funded by the ARIS program, focused on developing a training program for consultants who were to provide services to farmers. The RAFPP provided assistance to both organizations by developing organizational structure, training personnel and conducting educational programs for farmers.

USDA Commercial Agricultural Development Program (CADP)

The USDA CADP was implemented in 1996 and funded by USAID, to assist Ukraine develop its private agricultural sector. The CADP developed linkages with targeted raion private farmer associations and worked closely with them to develop support services for their members. The initial project assisted in the identification of viable private farmer groups that could be organized into a cooperative. The associations worked together to identify critical needs and the CADP provided resources to assist in meeting the needs.

Several critical areas of mutual need was identified by all groups: providing access to inputs (seed, chemicals, fertilizers, fuel); formation of machinery pools; assisting with processing and marketing; and providing information and training. Each of the four cooperatives formed in the Odessa Oblast included an Information Specialist. The Information Specialist's responsibilities included the collection and dissemination of input supplier and marketing information and conducting training programs on management, particularly relating to financial issues, business planning and marketing.

It was identified that Ukraine needed strong local, regional and national organizations representing private farmers, the organizations then assuming responsibility for providing processing, marketing, technological and informational services. A pilot project was implemented in Odessa Oblast to form four private farmer cooperatives, based on the US cooperative model, to provide an organizational structure and services to farmers (Lines and Ellerman, 1997). Based on the initial success of this pilot project the CADP's entire effort was directed toward the formation of cooperatives.

Issues That Evolved

USDA's six years in Russia and two years in Ukraine assisting in the development of a private agricultural sector built on its previous experience developing an extension service in Poland (Teeter, 1993). Both Russia and Ukraine have struggled with similar issues limiting extension development while at the same time emphasizing the need for further development.

Each is struggling with major structural elements: type of system (private, public, NGO); financing (public and/or private); services; and politics. To address these issues each country is investigating extension models from other countries and attempting to choose elements which address their needs.

In both Russia and Ukraine attempts are being made to simultaneously develop university-based systems, similar to the US Extension Service, and ministry level extension services. Both are competing for funding and recognition. The university-based systems are attempting to combine the outreach and research functions which form the basis of the US system of providing "research-based information." The ministry's are committed to the collection, collation and dissemination of information with little tie to the research institutions. In each case the universities appear to have a less political approach to outreach education allowing information access to a wider audience. The ministries restrict access to information based on political considerations. There is little practical cooperation between the Ministries and universities on coordinating programs.

Russia and Ukraine, due to the financial collapse of the FSU, are both experiencing extreme difficulties in providing financing for the developing extension service. Russia's collapse of the rouble in August 1998, and a simultaneous financial crisis in Ukraine, have forced both countries to divert limited resources allocated to extension development to other uses. Foreign assistance for extension development has also been reduced. The RAFPP was discontinued in February 1998 and the CADP is under consideration for continuation, but with a limited extension development component. Financial constraints have forced both countries to expand their efforts in designing a private sector, fee-based extension system.

Russia and Ukraine are struggling with determining which services are needed by their agricultural communities. Both, largely due to the history of the state and collective farms, are focused on technological services. A primary emphasis of the Ministry level extension services is in providing access to equipment and supplies. Large equipment pools, a mainstay of Soviet agriculture, are seen as a necessary component of the developing agricultural system. The break down in the Supply and marketing functions, formerly provided by the governments, are now seen as functions of the Ministry extension services.

The university systems are focused on the development of outreach education as a means of improving the management ability of the agricultural community. They are also more likely to see the connection between research and education as an important component of the extension system.

The political considerations in both countries concerning agricultural development are similar. In each case, there lacks a unanimous consensus toward the development of a private agricultural sector. Both the Ministry and university systems have large components which are committed to the revitalization of the former state and collective agricultural system. Officials at both levels are attempting to redirect efforts toward this revitalization process and elimination of the private agricultural sector.

One of the major difficulties encountered in both countries is the transitional state of both the political and economic environment. In both cases much of the political power is held by administrators who were trained under the command economy system. The communist philosophy of the government owning and controlling all assets permeates the governmental structure making any transfer of responsibility to the private agricultural sector difficult. Responsibility associated with ownership is a foreign concept. Under the collective system everyone owned so no one was responsible. The government provided the inputs, finances and markets, all major responsibilities under a privately owned agricultural system.

Future Extension Development in Russia and Ukraine

Both Russia and Ukraine need to focus on the development of structural issues before a viable extension system can be developed. The competition between the Ministries and universities has to be resolved so that a collaborative effort can be developed. The ultimate system will likely be one of direct cooperation with each entity defining its responsibilities. The universities should be focused on research and education while the Ministries develop information resources. The transitional status of their agricultural communities prohibits the adoption of a single model from a western country to the Russian and/or Ukrainian environment.

Financing will continue to be a limiting factor in extension development. As each country struggles with its current financial crisis less funding will be available from government sources. This will force the development of a private sector, fee-based component as the provider of agricultural information at the farm level. However, a transitional step where public extension services are administered on a "cost recovery" basis will likely occur. The difficulty of this development process is in the restriction of services provided based on the ability to pay for services. A segment of the agricultural sector will not receive services because of financial difficulties (Feder, Willett and Zijp, 1998).

Each developing extension service will need too more clearly identify target audiences and develop a precise list of services provided. Little effort has been placed on conducting needs assessments of the agricultural community, being more focused on the respective needs of the universities and Ministries. Types of services should be limited with initial efforts placed on establishing a management expertise in small scale, privately operated agricultural enterprises. Additional resources should be placed on methods of market development in a transitional economy. Less effort is needed on the technical aspects of agricultural production until the management base has been established.

Political considerations are the most difficult to address. Both countries are in a transitional phase from command structured economies to an economy based on demand and market considerations. The political commitment to the revitalization of the former state and collective agricultural system will remain a major force as long as politicians and state and collective farm directors remain in power. Acknowledging this fact, an extension system will need to develop that addresses the needs of both sectors. Current efforts toward the development of one or the other (state and collective agricultural system versus a private agricultural system) will need to change. An attitude is needed that acknowledges the need and place for both state and collective farms (or their new legal status as Joint Stock Companies) and private sector agriculture. Once recognized, services which address their respective needs will need to be developed.

Summary

Historically Russia and Ukraine, formerly under the banner of the USSR, have relied on dominant government control of all aspects of life, including agricultural production. Since the 1930's the collective farm has been the mainstay of agricultural production with all management decisions made by the central government.

Since the breakup of the USSR in December 1991 a private agricultural system has been emerging. Resources designed to support the command agricultural system are disintegrating and each, now independent country, is struggling with development of this new agricultural segment. Access, by the private agricultural sector, to information, education, management, supplies and marketing services are limited forcing the development of an extension service.

The developing extension services are struggling with identifying services that are needed and can be provided under existing financial and political constraints. At the same time, competition has developed between Ministries and universities as to who should provide needed services.

Future development of a viable extension system will depend on a political recognition of the need for all segments of the agricultural industry. Its development will also depend on the cooperation between Ministries, universities and the private sector. Foreign aide will also remain an important component providing both technical expertise and financing.

References

Beeler, Bradley J. (1998). *Are Russians Ready for Privatization?* OSU Center for Slavic & East European Studies. Public Lecture.

Boldin, Valery. (1994). *Ten Years that Shook the World, The Gorbachev Era as Witnessed by his Chief of Staff.* HarperCollins Publishers, Inc., New York, NY.

Csaki, Csaba, Zvi Lerman. (1997). *Land Reform in Ukraine, the First Five Years.* World Bank Discussion Paper No. 371. The World Bank: Washington, D.C.

Davies, R. W. *The Industrialization of Soviet Russia I: The Socialist Offensive; The Collectivization of Soviet Agriculture, 1929--1930.* Cambridge, Massachusetts: Harvard University Press, 1980, pp. 4--5.

Feder, Gershon, Anthony Willett, Willem Zijp. (1998). *Agricultural Extension: Generic Challenges and the Ingredients of Solutions.* The World Bank: Washington, D.C.

Freeze, Gregory L. (Ed.). (1997). *Russia, A History* (pp. 3-4). New York, NY. Oxford University Press.

Lines, Allan E., John Ellerman. (1997). *Facilitating Availability of Inputs for Private Farmers in Odessa Oblast Ukraine.* USDA/CSREES, Washington, D.C.

Martens, Ludo. (1995). *What should be done with the kulaks?* http://web0.tiac.net/users/knut/Stalin/node49.html

Stalin, Joseph. Compton's Encyclopedia Online. Compton's Learning Company, (1997). Online. Prodigy. (1 December 1996). http://www.optonline.com/comptons/ceo/04525_A.html

Teeter, Earl H. Jr., John L. Ragland, Michael J. McGirr. (1993) *Assisting Poland in Transition.* Journal of Extension, 31 (2).

Agriculture for Tourism Purpose Extension System in Taiwan

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Abstract

Agriculture for tourism purpose is an important part of Taiwan's agricultural development. In past years, Taiwan's agriculture has maintained on the agricultural production for the economic profit. Along the development of Taiwan society, the structure of industry has been shifted from maintaining in 1st and 2nd to 3rd industry. GDP increased, people's urge for leisure is increased. Therefore the development of agriculture is became diversity. Parts of farms have transformed their farms for tourism purpose.

Agriculture for tourism purpose developed because of leisure reason. In 1980, Taiwan government began to promote the agricultural tourism. The programs for agricultural tourism included financial aid to local government. This was the established of the extension system for agricultural tourism. The context of the programs included: (1)-creating activities for agricultural tourism, (2)-publishing bulletins for agricultural tourism, (3) supporting the local government engaging in.

Since the programs started, the development of agricultural tourism developed at full speed, tourism purpose farming became an important part in Taiwan agriculture. Thus the agricultural for tourism purpose extension system in Taiwan became diverse. The main elements consisted of governmental organization, agricultural innovations and local farmers' associations.

The object of the paper will analyze the perspectives mentioned in the previous.

1.Introduction

Agriculture for tourism purpose is a industry which afford the functions of tourism and leisure by agricultural resources, it means utilizing (1) agricultural productive activities (2) agricultural cultural (3) country scene (4) natural ecology as the resources of agricultural tourism. In this way we can improved Taiwan's agricultural development and afford people a nice way to close the agriculture and natural, having quality leisure time. Many countries had developed agricultural from 1st to 3rd industry for years Swiss, Germany, New Zealand and Austria etc. In Taiwan, there are some Forestry farms in 1950s, but agriculture for tourism is developed in this decade, it's the most important part in the development of Taiwan's agriculture recently.

In past years, Taiwan's agriculture had maintained on the agricultural production for the economic profit. Government maintain agricultural production, and development the extension system which focused on improving productive technology, and established a sound productive agricultural extension system. Taiwan's agriculture has made great progress in food production both in quantity and the quality.

Since 1970s, along the development of Taiwan society, the structure of industry have been shifted from maintaining in 1st and 2nd to 3rd industry. GDP increased, people's urge for leisure is increased. Therefore the development of agriculture became diversity. Parts of farms have transformed their farms for tourism purpose. Agriculture is shifted from 1st industry to 3rd industry. In agriculture development became diversity and the governmental policy promote agricultural tourism, The system for tourism agriculture has been established. The natural of this system are different with productive agricultural extension system, and this paper will describe

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the development of agriculture for tourism purpose and it's extension system.

1.The development process of Agriculture for tourism purpose

1950s, population growth is much sooner than food production, the government pay attention in improving food production for the economic profit. 1960s,agricultural production have made progress and solved the food problem, but there comes a new problem of too much food. Food supply is much higher than demand, quantity production make the prices of agricultural production fallen down. It affects farmers' income. The government thought it is not a sound agricultural structure which only maintaining in food production, so the government began to adjust the agricultural structure. There are some forestry leisure farms in 1950s, but they afford the leisure activities limited on forestry resources. 1960s under the pressure of adjusting agricultural structure, some farms in central Taiwan who opened their farms field for customers to go inside and harvest fruits by themselves, which named 'Tourism Fruit Farm'. These farms get profit and customers enjoy it, so many farmers in other areas imitated. The agricultural tourism not just utilize forestry resources but extend to agricultural resources. In 1979,Taipei city government and Taipei city farmers' association held 'The seminar of agricultural management and development in Taipei city', discussing the issues about utilizing agricultural resources in tourism and leisure, and concluded it is a nice way to develop Taiwan's agriculture. From now on, the government began promoting the agriculture for tourism purpose.

In the early time, the type of agricultural tourism is 'Tourism fruit farm' ' Tourism Tea farm' and 'Tourism agricultural farm', farmers opened their farm fields, customers harvest and bought fruits directly, they just stay in farms for hours. In the beginning, people enjoy it, but there comes some problems in productive and customers' aspects later. In productive aspect, the customers didn't know how to harvest correctly, they hurt the plants and the farm fields, made bad effect on agricultural production. In customers' aspect, Taiwan's agriculture is small farms, every tourism farm faces the limitation of capital and small farm field, they can't afford enough infrastructure like parks and toilets.Therefore it shorten the time customers stayed in the farms, and limited the development of tourism farms. This kind of agricultural tourism is limited on utilizing agricultural production , it's simple and poor as a leisure activities. Too many tourism farms arised, supply higher than demand making the tourism farms' decline.

The quantity of tourism farms rises but quality won't. The management of tourism farms is simple and poor, it won't afford diverse leisure activities to satisfied people's urge, tourism farms has been faced with bottlenecks. In the middle of 1970s, arise some leisure farms afford diverse, complexity activities. These farms with large scale space, afford kinds of leisure services, like tourism, country inn and agricultural experiencing …etc. Tong-shi forestry farm and Tainan chomalai farm is the begin of this kind of farms. These farms can afford leisure, educational, social, economical and environmental protection functions. Agriculture for tourism purpose from the type of 'tourism farm' became to the type of 'leisure farm' as the main developed direction. So far, the government begin to pay attention to the agriculture for tourism purpose, and thought it is a chance for developing Taiwan's agriculture in 1980s. 1989, The COA (council of agriculture, R.O.C.) and Department of Agricultural Extension, National Taiwan University held ' The seminar for developing agricultural tourism' together, for discussing and planning the development of Taiwan's agriculture for tourism purpose. This seminar collect experts' opinions to the government as conference. 1990, the government promote the agriculture for tourism purpose, executive 'the developing agricultural tourism project'. The main context is: A.

organize an agricultural tourism planning and consulted team, B.COA finical aid and planning 31 leisure farms, C. planning the educational training program for leisure farms' managers, D. discussing the regulation of 'leisure instrument manage conditions', E. executive the promotion of agricultural tourism, F. support the study about the development of agricultural tourism, G. design the brand mark of tourism agriculture for tourism purpose.

2.The distribution of agriculture for tourism purpose

Taiwan's agriculture for tourism purpose have developed about 30 years, from the 'tourism farm' in early time to 'leisure farm' in recent years, we can divided the development stags: (1) before 1970s, farmers open their farm fields, people can harvest and buy the production of farms. (2) after 1970, the farmers' association and city government promote the 'tourism farms' together, many tourism farms established in this period, (3) since 1986, arise 'leisure farms' with large scale space, capital, the owner is farmers' association or agricultural enterprise not single farmer.(by Shu-kun, Sun)

There are three types of agriculture for tourism purpose in today Taiwan, we will describe the characteristics and distribution of these farms below:

(1) Tourism agricultural farm

Tourism agricultural farm included some kind of farms: tourism fruit farm, tourism tea farm, tourism garden, tourism vegetable farm…etc. In general, these kinds of farms opened their farm fields, the customers can go inside the farm fields harvest the farm production by themselves. In 1983, PDAF (Provincial department of Agricultural & Forestry) executive 'the project of developing tourism agricultural farms' for more than ten years. Now there are 15 county/city, 50 towns, with1,826 acres of the tourism agricultural farms in Taiwan totally, more than 20 kinds of plants.

(2)Citizen farms

Citizen farms is using the farms around the city, divided these farm fields for small pieces afford to citizen. Citizen rented these lands for planting by themselves. In this way, they can enjoy the happiness of planting and experiencing the productive of agriculture. The characteristics of citizen farms are :

A. The people who use the farm land are not the land owners.
B. The main activities is 'experiencing of leisure'.
C. Most renters just go to the farms on holidays, in usual days the land owner will care the land and plants for renters.

The citizen farms are opened whole the year, people can go in the farms all the time while they rented the land. So far, the citizen farms are most located around Taipei and Taichung city. The aid from government is in the planning, management and the finical aid of infrastructure.

(2) Leisure farm

A leisure farm means the large-scale farm with complexity leisure activities. There are leisure agricultural farm, leisure forestry farm, leisure fishery farm…etc. These farms have natural space, natural scene and some agricultural activities, they utilize these resource afford customers kinds of leisure experiencing, no matter dynamic or static, natural education, country hotel, folks cultural activities, forestry path, animals watching…etc.

These farms with the functions both of country leisure and protect natural environment. COA and Provincial government executive 'the program of planning and establishing the leisure farms—5-10 farms per year' since 1992 to 1997. In this promotion period, there are farmers, farmers' associations and agricultural enterprises apply to engage in this program. So far there are about 40 leisure farms in Taiwan.

3.Agriculture for tourism purpose extension system in Taiwan

Agriculture for tourism purpose extension system in Taiwan included three kinds of agricultural extension organizations (1)the government institutions, (2)famrers' associations, (3)Universities and colleges. The extension system as showns in picture1. In national level, COA(council of agriculture R.O.C.) charge management affairs; in provincial level, is PDAF(provincial department of agricultural & forestry) ; in county-city level, is the department of agricluture in county-city government. District agricultural improvement stations and the farmers' associations in every level support in this system and excutive some projects for government. Universities and colleges afford kinds consults and opions to the farms owner and every levels of institutions. The leisure farms owners included single farms, farmers' associations, farmers' cooperations, agricultural entrprise and other groups.

The agricultural institutions in government promote the development of agricultural tourism, and they hope it has effects on developing rural region. Because the income from tourism agriculture will rise the economic situation of rural, narrow the gap in living standards between city and country, and to insure sustainable use if agricultural resources, harmonize agriculture and the natural environment. So the goal of the government is 'rural development', and promoting the agriculture for tourism purpose is a path to this goal.

The characteristic of this extension system is 'button-up' feedback decision model. Although the leisure of agriculture is promoting and established by the attention of the government, but it's achievement is by the 'supply-demand' of the leisure market. One of the important characteristics of the agriculture for tourism purpose is the 'locality', the locality is different by regions. Every regions have its' special characteristics, different with others. Local people know what their own characteristics is, the central-government doesn't, so the 'button-up' procedure is the most important characteristic in this extension system. This system included two kinds of clients, one is farm owners or managers, the other is local-government. They play an important role in this 'button-up' extension system.

In the aspect of farm owners, there are single farmers, farmers' associations, farmers' cooperation, agricultural enterprises, and other groups. To these clients, government affords the service as management consults, problem solving in management, kinds of suggestions and finical aid for software and hardware infrastructures. The procedure is that farm owners or managers take an application for their problems or needs, the upper units check the context of their projects, if the upper units committed their projects. They will get the aid or support they need.

The local government play two important roles in this extension system. One is charge leisure agriculture affairs; on the other hand, it's the client, too. The responsibility of the local government is to understand and investigate the local agricultural resources and characteristics that can be used in affording leisure, and write the projects about how to develop local leisure agriculture in the future. It may contain (1) the planning of software: design country tourism courses, held the agricultural cultural activities. (2) the construction of hardware, maintain the ancient constructions , country roads construction …etc. The goal of these constructions in software and hardware is a planning and constructed the country region as a whole region for leisure. While people come to countryside, they can feel a wonderful environment in front of them, not just some point of tourism farms can afford the leisure, but whole the country is a wonderful land for leisure.

4.Agriculture for tourism purpose extension system compares to traditional agricultural extension system in Taiwan

As we describe above, the traditional agricultural extension system is maintaining on agricultural production, in Taiwan we have a sound agricultural extension system for agricultural production, it is a 'up-down' transfer system. This extension system made agricultural production has grown faster than population in Taiwan. In this extension system, continual improvements in techniques and infrastructure and the healthy development of farmers' organizations. The agriculture for tourism purpose extension system so far is part of this traditional extension system, because these projects and programs are executive by those institutes and organizations in the traditional extension system. But it has different nature with the traditional one except it's scale is smaller, it's linkage is weaker. And we will analysis these different natures below:

(1) Knowledge learning system vs. technology transferring system

Taiwan's agricultural extension system included four kinds of extension organizations: government institutions, farmers' associations, universities & colleges and agricultural enterprises. These four types of organization with different nature but they play the same role in Taiwan's extension system, that is 'transferring technology'. But in agriculture for tourism purpose, the most important is learning knowledge. Because agricultural tourism is 3rd industry, it's not just 'productive', it's point is how to attract customers? So its concern is from the farm's planning, infrastructures inside, safety, management, …etc. It needs a package of knowledge for running a tourism farm or engage in agricultural tourism. And every farm has it's own special characteristics and special problems. Therefor, a technology transfer system couldn't satisfy the need of agriculture for tourism purpose. The agriculture for tourism purpose is a knowledge learning system.

(2) Consultative extension system vs. educational extension system

The traditional agricultural extension work in Taiwan is one kind of educational extension work. Agricultural institutions in government investigated the needs of agricultural development, then they make to extension program for farmers and rural people, executive these educational programs. This kind of work is kind of 'up-down' educational programs. But the work of agriculture for tourism purpose is different, because:

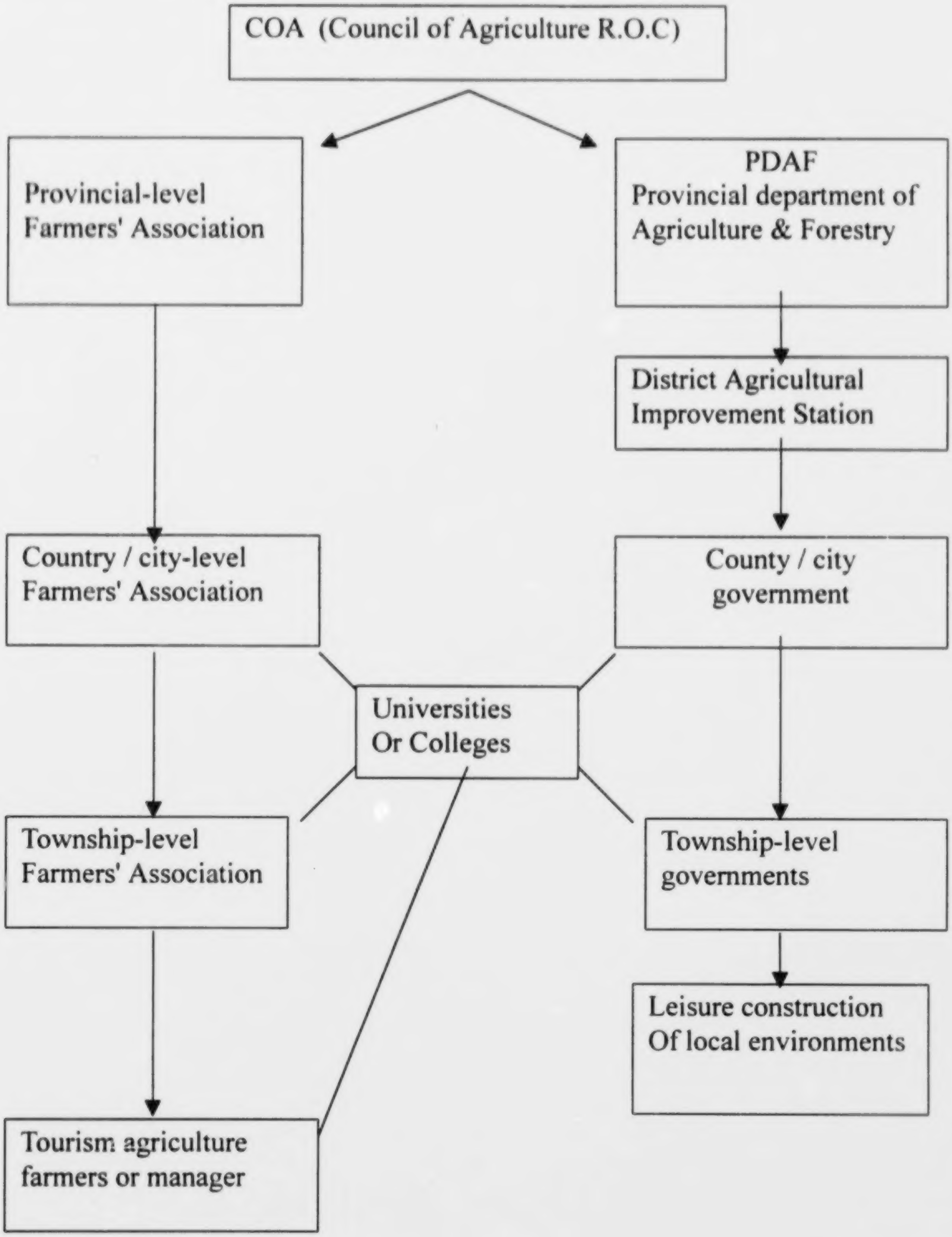
A. Agriculture for tourism is a new industry in Taiwan, it's developed direction is limited by farms' resources and characteristics, the agricultural institutions in central-government couldn't investigate every region and write the proper projects for them. So, the agricultural institutions in central government promote the main concept of agricultural tourism, and the executive work is done by local government. While the local government and tourism farms owners have met problems, the agricultural institutions will afford consultative services, further more afford the support programs.

B. Agriculture for tourism belongs to 3rd industry, while running this kind of business, the problems will be different by regions, farms, customers,…etc. The main problem will be about 'management', it is very important for the farm managers to keep a contact with a consultant. The consultant will afford the consult, suggestions and information all the time in managing a tourism farm.

5.Conclusion

Agriculture for tourism purpose is the most important part of Taiwan's agricultural development in this decade. The agriculture for tourism purpose extension system have been established step by step for ten years. Since 1970 the business of agriculture for tourism purpose is ' tourism Fruits farm', it is limited on the agricultural production exchange and now there are large scale leisure farms with diverse activities and leisure functions. Although the agriculture for tourism purpose extension system is not very complete ,complexity and the linkage is weaker than the traditional agricultural extension system, but it is more flexible. It afford kinds of support depends on farms needs and the needs of local government. Further more, the farm managers can search help from universities and colleges direct by themselves. In the future, the main direction of developing Taiwan's agriculture is developing the agriculture for tourism purpose. And the development of agriculture for tourism purpose will promote the development of rural region.

Picture 1: Agriculture for tourism purpose extension system in Taiwan


COA (Council of Agriculture R.O.C)
Provincial-level Farmers' Association
PDAF Provincial department of Agriculture & Forestry
District Agricultural Improvement Station
Country / city-level Farmers' Association
County / city government
Universities Or Colleges
Township-level Farmers' Association
Township-level governments
Leisure construction Of local environments
Tourism agriculture farmers or manager

Session B Extension Programs

March 22, 1:00 - 3:00 p. m.

Session Chair - David Dolly

Location: Cascade Room

TITLE: Successful Marketing Strategies in the West Virginia 4-H Program
AUTHOR: Gary J. Wingenbach
Morgantown, WVU
DISCUSSANT: James Christiansen

TITLE: Reducing The Uncertainty and Risk Faced by Farmers Using Farm Planning and Programming Techniques: A Role for Extension in the Caribbean in the 21st Century
AUTHOR: Elbert Johnson
DISCUSSANT: James Christiansen

TITLE: The Extension Approach of Developmental Organizations: A Case Study of a Rural Community in Trinidad
AUTHOR Amar Wahab, Neisha Mungroo and Wayne Ganpat
DISCUSSANT: Matt Baker

TITLE: 4-H and Young Farmers' Clubs (4-H/YFC) - A Channel for Preparing Young Farmers for the 21st Century in Trinidad and Tobago
AUTHOR: Deokee Bholasingh, Joseph Seepersad
University of the West Indies
DISCUSSANT: Matt Baker

Successful Marketing Strategies in the West Virginia 4-H Program

By

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Abstract

The purpose of this study was to ascertain which marketing methods and messages influenced West Virginia youth to join the 4-H program. Youth in 4-H, between the ages 13 to 18, were surveyed to obtain their perceptions of the most effective marketing methods and messages. It was found that electronic media and word-of-mouth were considered the most effective methods for reaching and recruiting potential 4-H members. Also, "active appeal" messages, particularly those stressing camps, fun, and friendships were considered the most effective marketing messages. A statewide plan must be developed, utilizing those messages and methods recognized as most effective to offset the recent decline in 4-H membership in West Virginia.

Introduction

The 4-H program helps youth develop leadership skills through participation in yearly projects, meetings, camps, and county or state fair competition. However, the 4-H program cannot help if youth are not aware of or become involved with a local program. During the past several years, 4-H enrollment in West Virginia has decreased significantly. Identification and use of the most effective marketing and recruitment strategies may help increase awareness of and enrollment in the West Virginia 4-H program.

Marketing methods are used often by nonprofit organizations to increase awareness, attract attention, increase funding support, and attract volunteers. Wells, Burnett and Moriarity (1992) define marketing as the strategic process a business uses to satisfy consumer needs and wants through goods and services. Marketing is also attracting the interest of nonprofit organizations [and] US government agencies are showing an increased interest in marketing (Kotler & Armstrong, 1991). The West Virginia University (WVU) Extension Service may increase 4-H program enrollment by revitalizing its marketing strategy, but first, current marketing methods must be determined. If the WVU Extension Service wants to develop a successful marketing strategy for the state 4-H program, it is imperative that youth assist in determining the types of marketing methods most appealing to them.

In a study concerning the organizational effectiveness of 4-H, Stewart (1995) recommended the implementation of a formal recruitment process. Stewart's recommendation was based in part on the study by Diem (1990) who found that 65% of youth who joined 4-H found out about it through their local fair or other 4-H activity. In addition, 51% found out about 4-H from a friend, 16% from a parent, 19% from a brother or sister, 18% from a newspaper, 12% from a teacher or school, 9% from television, and 5% from the radio. All these sources may be classified as marketing methods.

The West Virginia 4-H program could be an important venue for educating youth about social skills and leadership development. Also, it may provide the spark for developing interests through experiential programs and projects, but only if youth become aware of the program and are influenced to join and participate in it.

Purpose and Objectives

The purpose of this study was to ascertain which marketing methods and messages influenced West Virginia youth to join the 4-H program. Specific objectives were to:

1. Describe factors that influenced West Virginia 4-H members to join 4-H.
2. Determine the marketing methods that convinced youth to enroll in the West Virginia 4-H program.
3. Determine the marketing messages that convinced youth to enroll in the West Virginia 4-H program.

Research Methods

A descriptive survey research method was used to collect data from 4-H members between the ages of 13 and 18 in West Virginia. The population for this study consisted of all 4-H members between the ages of 13 and 18 who live in West Virginia. West Virginia University 4-H Extension Specialists estimated the population to be N=24,000. West Virginia has 55 counties, separated by the WVU Extension Service into four geographic regions. Using the methodology of Davis (1971), a statewide representative cluster sample of 400 current 4-H members was drawn from the population. Excluding the county in which the survey was pre-tested, a simple random sample produced five counties from each of the four districts. Each of these 20 counties received 20 survey forms, for a total of 400 surveys.

A questionnaire was developed by the researchers, based upon information gathered from various studies, marketing textbooks, magazine articles and other sources, which would provide data to meet objectives of the study. The questionnaire consisted of three parts. Part one inquired about the reasons why the youngsters joined 4-H. Part two requested participants' opinions regarding the most useful marketing methods and messages for recruiting youth into clubs like 4-H. Part three requested demographic information including age, gender and place of residence.

Following pre-testing and final revision of questionnaires, packets of 20 questionnaires, each containing a cover letter, a return envelope, a 4-H sticker and consent and assent forms, were mailed to 4-H Extension agents in the 20 selected counties. Agents were asked to address and mail questionnaires to 20 randomly chosen 4-H members between the ages of 13 and 18. Usable questionnaires were returned by 175 of the 400 4-H members (44%).

To test for non-response bias, respondents were categorized as early and late respondents (Miller & Smith, 1983). Ratings in each category of marketing messages and methods were analyzed using ANOVA tests to determine if significant differences existed between early and late respondents. No significant differences were found. Cronbach's alpha, used to measure instrument reliability, revealed alpha coefficients of 0.92 for the marketing messages' scale and 0.93 for the marketing methods' scale. Frequencies, means, and analysis of variance were used to describe and analyze data.

Findings

Over 35% of the respondents were between the ages 13 and 16. The group included 61% females and 42% resided on farms while 58% lived in urban areas.

Participants recorded the factors that influenced them to join 4-H (Table 1). Responses included "it sounded fun" (65.1%), "my friends were in it" (61.7%), and "to meet new friends" (56%). Parental and/or familial factors were considered important by more than 40% of the participants.

Table 1. Factors Influencing Respondents to Join 4-H

Item	Frequency*	Percent
Sounded fun	114	65.1
Friends were in it	108	61.7
To meet new friends	98	56.0
Parent or guardian wanted me to join	86	49.1
Family was already involved	72	41.1
For the activities offered	51	29.1
Wanted to take a specific project	25	14.3
I was bored. There was nothing to do	22	12.6
Teacher suggested it	12	6.9
Other reasons	25	14.3

*Multiple answers possible

Participants rated their perceived importance of various marketing methods used to convince them to join the 4-H program (Table 2). Using a four-point scale (1 = not important, 4 = very important), respondents recorded the highest ratings for "your friends or classmates telling you about 4-H" (3.60) and "4-H information on the Internet and computer programs" (3.50). Tangible items (i.e., book covers, bookmarkers, buttons and pins, and stickers) were given the lowest ratings.

Table 2. Mean Importance Ratings for Individual Marketing Methods

Statement	Mean	SD
Your friends or classmates telling you about 4-H	3.60	0.60
4-H information on the Internet or computer	3.50	0.73
County and state fair exhibits about 4-H	3.21	0.87
Television announcements about 4-H	3.20	0.86
4-H exhibits at malls and stores	3.07	0.89
Posters at school about 4-H	3.06	0.88
Signs in stores and arcades about 4-H	3.03	0.83
Booths about 4-H at school fairs	3.00	0.86
Radio announcements about 4-H	2.95	0.90
Adults telling you about 4-H (like teachers/coaches)	2.93	0.84
Magazine articles about 4-H	2.93	0.83
Billboards along the road about 4-H	2.93	0.85
Mail sent to you about 4-H	2.91	0.90
Unknown people your age telling you about 4-H	2.90	0.83
Videos about 4-H	2.81	1.00
Your parents or guardians telling you about 4-H	2.80	0.90
Special 4-H days at school	2.79	1.00
Pencils/pens with the 4-H clover given to you	2.74	1.04
Letters sent home from school about 4-H	2.67	0.92
Newspaper advertisements about 4-H	2.63	0.89
Bumper stickers about 4-H	2.62	0.96
4-H stickers given to you	2.60	1.02
4-H buttons and pins given to you	2.56	1.00
4-H bookmarkers given to you	2.50	1.03
4-H book covers given to you	2.46	1.04

Note. Scale: 1= Not important; 2 = Somewhat important; 3 = Important; 4 = Very important

Participants rated their perceived importance of various marketing messages used to convince them to join the 4-H program (Table 3.). Using the same scale (1=not important, 4=very important), respondents recorded highest ratings for "you can go to 4-H camp" (3.66), "you can be with old friends in 4-H" (3.58), and "you can meet new friends in 4-H" (3.50). Fairs, service projects, meeting leaders, projects, and family involvement were considered least important.

Table 3. Mean Importance Ratings for Individual Marketing Messages

Statement	Mean	SD
You can go to 4-H camp	3.66	0.66
You can be with old friends in 4-H	3.58	0.57
You can meet new friends in 4-H	3.50	0.67
4-H is fun	3.40	0.74
4-H is exciting	3.38	0.70
4-H helps you feel good about yourself	3.37	0.80
You can help make the world better in 4-H	3.32	0.77
You are free to be creative in 4-H	3.29	0.86
You can help keep the environment clean in 4-H	3.25	0.78
4-H members participate in lots of activities	3.25	0.80
You can learn to be a leader in 4-H	3.21	0.83
You can have a role in decision-making in 4-H	3.16	0.79
You can learn to be responsible in 4-H	3.15	0.87
You can volunteer to help others in 4-H	3.13	0.83
You can learn new things in 4-H	3.11	0.86
You can join in county and state fairs in 4-H	3.04	0.91
You can do 4-H service projects	2.89	0.83
You can meet exciting, caring 4-H leaders	2.84	0.90
4-H members take lots of up-to-date projects	2.79	0.87
Your family can be involved in 4-H	2.74	0.91

Note. Scale: 1 = Not important; 2 = Somewhat important; 3 = Important; 4 = Very important

Educational Importance

The knowledge that marketing methods such as electronic media and word-of-mouth were the most influential factors in recruiting 4-H members indicates that a new marketing strategy is needed in West Virginia. The traditional marketing model, based on tangible items promoting 4-H, is no longer appealing to West Virginia youth who are becoming increasingly Internet savvy. The WVU Extension Service must acknowledge that even remote locations in rural West Virginia have attained Internet access. Today's youth are more inclined to use the Internet for gathering information about various programs including the 4-H program. The WVU Extension Service should develop an interactive Internet site that incorporates marketing messages with an active appeal (opportunities for participation in 4-H camps and to be with friends) to influence youth to join the 4-H program. This new marketing strategy may have significant impact for other rural states and/or other countries that seek to promote the 4-H program.

Based on the findings of the study, additional recommendations included:

1 A statewide 4-H marketing model should be developed for recruiting new members.
    a) Develop interesting, attractive and interactive 4-H recruitment information for the World Wide Web.
    b) Internet site emphasis should be placed on 4-H activities that promote friendship and fun.
2 Further study is needed to determine the most effective marketing methods and messages for influencing parents to encourage their children to join 4-H.
3 Similar studies to this one should be conducted in other parts of the country and/or world to discover the best marketing strategies for recruiting 4-H members.

References

Davis, J.A. (1971). Elementary survey analysis. Englewood Cliffs, NJ: Prentice Hall

Diem, K. (1990). How youth find out about 4-H and why they join [Abstract]. Summary of research in extension, 5, 75.

Kotler, P. & Armstrong, G. (1991). Principles of marketing, 5th ed. Englewood Cliffs, NJ: Prentice Hall, Inc.

Miller, L. & Smith, K. (1983, September/October). Handling nonresponse issues. Journal of Extension, 21, (5) 45-50.

Stewart, L. (1995). Organizational effectiveness: 4-H as a case study [Abstract]. Dissertation Abstracts Online Master's Thesis. University of Guelph (Canada). ISBN: 0-612-04142-5

Wells, W., Burnett, J. & Moriarity, S. (1992). Advertising: Principles and practice, 2nd ed. Englewood Cliffs, NJ: Prentice-Hall, Inc.

REDUCING THE UNCERTAINTY AND RISK FACED BY FARMERS, USING FARM PLANNING AND PROGRAMMING TECHNIQUES

A Role for Extension in the Caribbean in the 21st Century

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Abstract

When a small farmer embarks on any productive activity he or she is uncertain what the actual outcome will be. Uncertainty can be caused by environmental variations, price variations and a lack of information. In addition, with the introduction of GATT, farmers in the Caribbean are now faced with international competition from more efficient and productive farmers around the world. Research has shown that most small farmers are risk-averse. He or she will be prepared to forego an amount of income in order to achieve certainty; an 'insurance premium' the person is willing to pay in order to achieve certainty. In practice, small farmers do not make all his/her decisions at one point in time. Rather, decision-making is a sequential process. Such multistage decisions can be represented by decision trees and using dynamic programming to the optimum sequence of events a farmer may choose, based on his attitude to risk. Farm advisors can then use this information in analyzing decisions and suggesting improved choices to farmers. This seems to be an appropriate role for extension moving into the 21st century.

Introduction

It is widely recognized that a high level of uncertainty typifies the lives of people in farm households in developing countries, especially in the tropics. According to Upton (1987), uncertainty has three main causes (i) environmental variations causing production and yield uncertainty; (ii) price variation causing market uncertainty, and (iii) lack of information. All of these are significant where unreliable rains and pest and disease outbreaks cause wide variation in resource availability and in crop and livestock yields. Human diseases are frequent, unpredictable and costly to treat. Injury or ill health of a family member at a critical period may cause serious loss of production and income. Hence, farmers cannot plan with certainty; his decisions are subject to risk.

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Uncertainty and risk in Caribbean Agriculture

Caribbean agriculture can be characterized as subsistence in nature, though a vibrant commercial sector is now emerging. There are a large number of very small farms operating on less than 5 acres of marginal land; usually on relatively steep slopes. Variations in climate result in annual problems of hurricanes, floods, droughts, and more recently, volcanic eruptions, as in the case of Montserrat. High incidence of pest and diseases especially in the rainy season, aggravated by poor plant quarantine control, results in high production costs for most crops. Testimony to this is the recent introduction of *thrips palmi* and the hibiscus mealybug (*Maconellicoccus hirsutus*) which threatened to devastate Caribbean agriculture. Market instability and a lack of or use of market information is common. The recent GATT Agreement has ushered in trade liberization around the world. Farmers in the Caribbean are now exposed to competition from more productive and efficient farmers in developed countries. Thus adding another dimension of uncertainty and risk to the environment in which these farmers operate. In some countries, praedial larceny is a serious problem.

Farmers in the Caribbean attempt to deal with these uncertainties and risk in several ways: (I) practicing subsistence farming, (ii) diversification, (iii) intercropping, (iv) mixed cropping, (v) seasonal production in the wet or dry season, (vi) mixing "cocktails" of pesticides, and so on.

Theoretical Framework

Generally, farmers operate under uncertainty with respect to yields and prices of inputs and final products. Much work on models of risk and uncertainty has been undertaken, particularly in the late 1960s and 1970s. One approach suggests that the outcome of production decisions are not measured simply in monetary terms but by the satisfaction or utility which the outcome generates. In an uncertain environment where there are a number of possible outcomes, each with a probability of occurrence, the farmer will seek to maximize expected utility. (Colman et al, 1989). The production decision rule will depend on the farmer's attitude to risk. There is a general agreement that farmers in developing countries are risk-averse. Anderson et al, 1977 states that the treatment of risk as being 'based on the decision maker's personal strengths of belief about the occurrence of uncertain events and his personal evaluation of potential consequences' is firmly rooted in the economic concept of personal utility maximization. (Colman et al, 1989). This means that individuals are considered to make decisions consistent with their personal objectives, and therefore to maximize their personal 'welfare' or 'happiness'. In the case of subjective assessment of uncertain events the individual maximizes expected utility given his/her beliefs about events and outcomes. Expected utility theory also gives rise to a formal economic approach to risk analysis called decision theory. Expected utility requires that the individual hold consistent preferences between various alternatives that confronts him/her. - a concept called certainty equivalence (CE). This is what enables less or more risky alternatives to be compared and placed in a scale of personal preferences by the decision- maker. A risk-averse person will be prepared to forego an amount of income in order to achieve certainty; the insurance premium the person is prepared to pay in order to achieve certainty. A risk-neutral person is indifferent between a certain income and the expected money value of two risky outcomes. The risk taker might have a preference for taking the chance on obtaining the higher income even though it is one of the two risky outcomes, the second of which might make them worse off than before; "a gambler". (Ellis, 1993).

However there is fairly general agreement that farmers are risk averse. They are willing to forego some income or face extra costs in order to avoid risk. They are cautious in their decision-making.

Research into risk behaviour by small farmers

The view that uncertainty has a serious impact on the economic behaviour of the small farm household provides much scope for empirical research into the question of risk. This research is designed to discover whether and to what degree small farmers are risk-averse, the impact of risk on farm efficiency and on agricultural growth, the major sources of risk, and ways that the adverse effects of risk might be ameliorated.

Much research has been done in recent years, involving the estimation of utility functions of individual farmers in order to measure their attitudes to risk. The estimation procedure is based on farmer interviews in which the respondent is asked to choose between alternative hypothetical gambles, with different sets of prizes and/or different probabilities.

Current practice in the economic analysis of risk is not based on the notion of objective risk. In most decision situations what is relevant is not the assumption of superhuman knowledge concerning the likelihood of uncertain events, but rather the decision-maker's personal degree of belief about the occurrence of events. This changes the analysis of risk and uncertainty from an objective to a subjective matter. Risk now refers to the subjective probabilities attached by farm decision maker to the likelihood of occurrence of different events.

Whatever the case, these theories have confirmed that (I) risk aversion has a cost in terms of income foregone on average, (ii) some activities are more risky than others, and may therefore be avoided, and (iii) diversification reduces risk provided that the component activities are not strongly positively correlated.

Thus risk aversion may explain why farmers are reluctant to adopt new crop varieties with high but variable yields, why they prefer to grow subsistence crops even when food may be purchased more cheaply, why they practice mixed cropping and why they pursue many on- and off-farm activities.

A study of small farmers in Kenya (Wolgin,1975) provided strong evidence of risk averse behaviour. First, it was found that the marginal value products for most inputs were higher than their unit costs. This implies that farmers used less than the economic optimum level of input and may be explained by farmers' willingness to forego income in exchange for a reduction in risk. The ranking of the crops by marginal value product correlated closely with their marginal contributions to risk. In other words, the riskier the crop, the higher was the marginal value product, which implies that inputs were further below the 'economic optimum'. (Upton, 1987). Johnson (1993) showed that majority of cocoa farmers in Trinidad did not adopt technologies they perceived to be risky. The perception of riskiness of the technology also proved to be more significant in determining adoption levels than profitability.

Since most farmers take precautions against risk, it follows that they will differ in the extent of their risk aversion. This may cause or exacerbate income and wealth disparities between households. The cautious risk avoider will pay more, or forego more income on average, than will the expected value maximizer. Given that the wealthy farmer, with plentiful resources, can afford to take risks and innovate while his poorer neighbour cannot, there is a natural tendency for the rich to get richer while the poor may stagnate. Financial assistance to the poor may enable them to become less risk averse and more innovative.

Multistage decision-making

In practice the farmer does not make all his decisions at one point in time, then wait for nature to take its course. Rather,decision-making is a sequential process. Fig. 1 A multistage decision problem

Source: Upton (1987)

The final crop yield obtained is the outcome of a series of decisions of when and how much seed to plant, when to weed and how much labour to use, when to harvest and so on. Thus the farmer constantly adapts and adjusts to a changing environment. Many farmers purposely adopt a piecemeal approach to their decisions in order to maintain flexibility. Typically, only a part of the cropped area is planted at the first rains, decisions about cropping the remainder being delayed until more is known about the pattern of the weather. (Upton, 1987).

Decision trees, as illustrated in a simple example shown in Figure 1 may represent such multistage decision problems. It shows an alternating sequence of actions and outcomes, starting from the left and moving across to the right. Actions stem from decision nodes represented by black squares,

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while outcomes stem from chance nodes, which are unmarked. Probabilities are shown in brackets alongside outcome branches. In this example, the initial decision is whether to plant at the outset of the rains. The second decision whether to interplant, extend the cropping area, or plant for the first time is taken a month later, in the light of whether the rains have continued. For simplicity, the decision tree finishes at this point, although in practice further decisions would arise before the final yields are obtained. Expected money values (EMVs) for each branch are shown (boxed in) on the right-hand side of the diagram.

The optimum sequence of decisions is determined by working backward from the right-hand side using a process of 'averaging out and folding back'. This means that at each decision mode, the branch with the highest EMV is chosen, while at each chance node the EMV is averaged out. Figure 2 illustrates the process. From the upper branches on the right, it is clear that the EMV from extending the planted area is greater than that from interplanting or stopping. Hence the latter options are rejected and the EMV at the decision node is the same as that for extending the area. Now the EMVs for the two possible outcomes can be averaged out at each chance node. Since the EMV at the planting mode is greater, this is the option chosen. The optimal sequence of decisions in this case is to plant at the first rains and then to interplant, this sequence giving an EMV of $88.

This method of analysis of multistage decisions is known as 'Dynamic Programming'. It depends on the principle that the optimal policy at any given stage depends only on the present state of the process, and not on how that state was achieved. As a result decisions can be considered one at a time, working backwards from the final decision. Care and effort is needed to establish all possible sequences of actions and outcomes and the probabilities of the latter. (Upton, 1987).

Role for Extension

Clearly farmers do not normally draw decision trees but it can help advisors in analyzing decisions and suggesting improved choices. Extension agencies can be equipped to provide this service to farmers once their individual attitude to risk has been assessed. Dynamic programming of farm management decisions is an application of 'control-theory'. The objective is to find an optimal policy for control of the farm system. A schematic diagram of the control process is given in Figure 3. The feedback represents the way the new information about the weather and other variables is used to modify the policy in multistage decision making. This feedback of information is best facilitated by an extension agency.

The method identifies the choices, which maximize expected returns. This is the optimum, only for a risk indifferent farmer. However, the technique is easily adapted to find other possible optima, such as the maximin. Thus from Figure 2 we see that the maximin sequence of decisions is the same as before, since the worst possible outcome for the 'plant' strategy is $60, while that for 'do not plant' is $30. More commonly, outcomes are evaluated in terms of expected utility, rather than EMV. Since the decision-maker's expected utility takes account of his risk aversion, this is reflected in the resultant choices.

Any method of reducing risk to the individual producer, who is risk averse, is beneficial. First, because his utility is increased by the reduction in risk, and second, because it may enable him/her to concentrate on maximizing expected returns, thereby increasing productivity and competitiveness. Provision of subsidies and other financial assistance by governments and international agencies to small farmers should have similar effects – reducing income variations and risk.

Upton (1987), mentions four interventions which can reduce risk and uncertainty of small farmers: (i) new technologies are likely to influence production and yield uncertainty: the need to assess the riskiness of new technologies is increasingly recognized, (ii) price stabilization policies, minimum guarantees and provision of timely information can reduce market uncertainty as do improved input supply services; (iii) the provision of information to farmers regarding new technologies, market prices; new policies will also reduce uncertainty and risk; and (iv) crop insurance.

Most of these interventions can be facilitated by extension agencies, since they constitute the link between the farmers and other relevant agencies and policy makers.

Conclusion

Clearly small farmers in the Caribbean or anywhere else cannot be expected to draw decision trees, source and analyze market information on their own. A specialized farm management unit in Extension can provide such services. This unit should be adequately staffed with well-trained personnel to provide these services to farmers on a timely basis. Training is therefore urgently needed for extension officers to become familiar, but not necessarily experts, with programming techniques, farm planning and marketing concepts. They should be able to interpret information provided by the specialists, and impart them to farmers.

References

Colman, D. and Young, T. (1989). Principles of Agricultural Economics. Markets and Prices in Less Developed Countries. Wye Studies in Agricultural and Rural Development. Cambridge University Press.

Ellis, F. (1993). Peasant Economics. Farm Households and Agrarian Development. 2nd ed. Wye Studies in Agricultural and Rural Development. Cambridge University Press.

Johnson, E. (1993). Factors Affecting the Adoption of the Black Pod Control Technology among Cocoa Farmers in Trinidad and Tobago. M.Phil Thesis. Department of Agricultural Extension, Faculty of Agriculture, University of the West Indies, St. Augustine, Trinidad.

Upton, M. (1987). African Farm Management. Cambridge University Press.

The Extension Approach of Developmental Organizations: A Case Study of a Rural Community in Trinidad

by

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Abstract

Developmental efforts are more successful when there is participation from the communities involved. Their participation in the decision making process could enhance the success of development projects.

A multi-organisational approach to development is being conducted in a socio-economically depressed village in rural Trinidad. To date, the results of their efforts are small and delivery is slow. This study examined the efforts of the organisations involved, particularly their extension effort, their interaction with each other and with the community leaders.

The results showed some small level of interaction among organisations and little consultation with local leaders at the onset of the iniatives. This resulted in duplication of training programmes. Also, where there was some interaction among organisations, sustainable projects were being developed.

In cases where many organisations are working in one geographic area trying to effect development, interaction among each other and with local leaders are necessary for efforts to succeed and to be sustainable.

Introduction

Uma Lele (1976) sees rural development as being concerned with improving the standard of living of the mass of low-income population residing in the rural areas and making their development self-sustaining. Extension, in its role to 'help people to help themselves through educational means to improve their level of living' (Maunder, 1972) can be very effective at promoting sustainable development in rural communities.

In Trinidad and Tobago, agrarian reform and rural community development have traditionally been marginalised as the entire axis of the political economy has focused on petroleum and urban industry (Craig, 1985). As a result, the concept of 'rural' is defined by geographical and political dimensions. Communities such as Mayaro and Rio Claro, both located within the rural Nariva region have a history of underdevelopment and neglect. Moreover, the Town and Country Planning Development Report (1982) listed the Nariva Region as possessing the poorest amenities (physical and social) and some of the lowest income-bracket communities in the country. The Nariva Region is therefore rural, not only by virtue of its remoteness from the main urban and residential centres, but also because of its socio-economic disposition.

The main economic activity in the region is agriculture, most of which is carried out in the Nariva Swamp. This occupies over 80% of the region. The Swamp is the largest freshwater wetland in Trinidad and Tobago, and is reputed to be a sanctuary for an abundance of wildlife and flora. Owing to recent conflict over the rights of use/access to the swamp's resources, the Nariva swamp was designated as a wetland of international importance under the Ramsar (1981) Convention. Wise use, the primary tenet of this convention, has prompted the involvement of numerous agencies (government and non-government), e.g. Wildlife Section of the Ministry of Agriculture, Land and Marine Resources, Pointe-A-Pierre Wild Fowl Trust, etc. in advocacy and raising public awareness/consciousness of the need to conserve and protect the swamp's integrity. Recently, some other agencies have become interested in the socio-economic conditions of the human communities that are situated on the fringes of the swamp, with the hope of enhancing the social and economic development of these rural communities.

Developmental efforts, however, are more successful when there is participation from the communities (Pieterse, 1998) and such efforts at rural development (Gomes, 1985) should aim not only to increase incomes, production and productivity, but also to encourage greater participation of the community in the decision making process affecting control of social and economic resources. Organsiations effecting developmental work must not only aim to achieve these objectives, but must also put measures in place to ensure their sustainability.

The Kernahan Community

Kernahan is located on the south-east fringe of the Nariva swamp. It is probably the most socially and economically depressed of all the swamp's communities, mainly due to its remoteness from the decision-making institutions of the country. The community comprises about 500 individuals from approximately 100 households. The majority of the residents are Indo-Trinidadians who resettled in Kernahan from another community in the hope of accessing land. The community suffers from poor access to physical and social infrastructure such as electricity, pipe-borne water, telephone services, proper roads, health and transport. Most residents live in wooden houses constructed on land-filled areas in the swamp.

The livelihood of the Kernahan community is characterised by watermelon and rice based agriculture, coupled with fishing and Conch catching. Being situated on State-owned lands, the community suffers from insecure land tenure. This restricts access to credit. Despite this, a situation of 'customary' tenure has emerged to afford access to land for agriculture. Most households 'own' 3-acre plots and rely heavily on family labour. Wherever labour is hired it is sourced from within the community.

Most of the income gained from agricultural and fishing operations just equals household expenditure (Mungroo and Wahab, 1998). This makes it difficult to save for business or further income-generating enterprises. Residents perceive their subsistence culture as risk-prone and this contributes to the inadequate contribution of the village economy to the socio-economic well-being of the villagers. In addition, residents do not have access to the knowledge, skills and resources necessary to pursue non-traditional economic activities, which could provide more stability to their economic status. Female villagers in particular, do not have access to independent income-earning activities.

The Problem

A startling reality of this community is that over 90% are illiterate due to the absence of pre and primary schooling facilities and the dominance of a generation that does not place great emphasis on formal education in its definition of identity, empowerment, development, nor survival. The youth are underprivileged due to the absence of recreational facilities and opportunities for adult education. As a result, poor self-esteem and commitment inhibit their co-action (Mungroo and Wahab, 1998).

Because of its' lack of legitimate access to/control of economic resources and therefore the stability and adaptability that this brings, the community can be described as socio-economically unsustainable. Moreover, the declining feasibility of the traditional community economy (agriculture/fishing) coupled with the lack of non-traditional alternatives is a critical issue in this community's dis-empowerment and hence, its' underdevelopment. As a result, many developmental organisations have started projects in the area, hoping to address some of these issues. Results however appear to be both small and slow in realization in comparison with the efforts of the multitude of organizations involved.

Objectives

This paper examined the impact of the extension efforts of the organisations working in the area and analysed their integrated approach to effecting sustainable rural development. Specifically it examined:

- the level of interaction between organizations working in the community, and;
- the level of participation of community leaders in the developmental efforts of these organisations.

This was done to evaluate their efforts and suggest reasons why such efforts are slow in achieving the goal of sustainable development of the community.

Methodology

A preliminary investigation involving participant observation was conducted over a three-week period, starting January 1998; to build community trust and gather data on the socio-economic status of the community. For the rest of the year, follow up visits on a monthly basis were made to observe and assess the ongoing work of the intervening organizations. Subsequently, all organisations were interviewed to determine the level of interaction with each other and the effectiveness of their extension efforts.

Results and Discussions

The organizations and their work

Several organizations (governmental and non-governmental) carry out active extension work in the area. These are the Forestry and Agricultural Extension sections of the Ministry of Agriculture, Lands and Marine Resources (MALMR), the Agricultural Development Bank, the University of the West Indies (UWI), the Youth Training Employment Partnership Program (YTEPP) and the Caribbean Network for Integrated Rural Development (CNIRD).

The Forestry Section has an officer who visits the area on a regular basis. Since most of the villagers earn their living by fishing in the swamp, these visits are aimed at educating the villagers on ways of earning a livelihood without compromising the resource base of their environment. Personnel from the University of the West Indies often visit the area offering advice and help on developmental issues as well as creating linkages with the community and other organizations that can assist the community in achieving their developmental goals. The Youth Training Employment Partnership Program conducts training courses in an effort to give the people alternative means of employment. Their effort has engendered a new hope in the youth of the area. The Caribbean Network for Integrated Rural Development conducted an Entreperneurship training course oriented towards eco-tourism and hopes to follow up by assisting the community to set up the necessary infrastructure. The Agricultural Extension service of the MALMR conducts training to interested villagers in aquaculture, duck-rearing and rice production.

The recent upsurge of activities by these organizations have led to a more vibrant village council (a community leadership group concerned with their community development). The council has so far been able to improve basic infrastructure, e.g. roads, and has stepped up the pace of their lobbying for basic amenities, like water and electricity. Important linkages have been created with funding organisations, e.g. the Community Development Fund (CDF) which may be financially able to assist the community in their developmental efforts.

Analysis of the Extension Effort

Most extension efforts are aimed at skills training with the view of reducing unemployment in this rural community (see table) with the exception of the UWI which is mainly research based. This training focus has resulted in a resource base of skilled personnel, who are unable to channel their training into economically rewarding avenues, since most of these organisations do not assist those trained to secure funds to become self employed. As such the unemployment situation remains unchanged and a culture of 'train and leave' has developed.

Most organizations are not ensuring the sustainability of their efforts, neglecting to foster closer inter-organisational collaboration. However, the collaborative effort of YTEPP, MALMR (Agricultural Extension Division), CDF and the Village Council in an integrated farming project appears to be the only effort with the potential to become sustainable.

Interaction of Organizations with Community leaders

Most organizations indicated that they consulted with the community leaders who facilitated the conduct of informal meetings in the community. These organisations have been actively involved in Kernahan for as little as 6 months (CNIRD) to as much as 20 years and more (UWI and MALMR, Extension Division). However, the majority of organizations have started projects within the last two years.

Organization	Services/support	Time in Area	Meeting with village leaders to plan	Inter-Organizational interaction	On-going interaction	Knowledge of other organizations' work
NGOs						
CNIRD	Skills training and infrastructural development	6 months	YES	YES	YES	Some Knowledge
UWI	Social research Environmental research	2 yrs. >30 yrs.	YES YES	NO		Some Knowledge
Village Council	Community development	NA	NA	SOME	YES	Yes, Good Knowledge
Governmental Organizations						
Wildlife Section, Forestry Division, Ministry of Agriculture, Lands and Marine Resources	• Protection of flora and fauna • Sustainable development	8 yrs.	YES	NO	NO	Some Knowledge
Regional Extension Unit	Training in duck rearing and rice	> 20 yrs.	YES	SOME	Some	Some Knowledge
Agricultural Development Bank	• Reduction of unemployment • Increase youth involvement in agriculture	intermittent (twice in three yrs.)	YES	NO	NO	Knowledge of one organization
YTEPP	skills training for employment	1 yr.	YES	NO	Some	Some Knowledge
CDF	Funding	<1 yr.	YES	No	Some	Some Knowledge

Table: Organisations, roles and interaction in the community

Organizations' Interaction with each other

There is very little interaction among the organizations at the start of their intervention with the exception of CNIRD and the MALMR, Extension Division. As a result of this, there is a general uncertainty about the work of other organizations (see Table) in the area, resulting in the organisations conducting the similar training courses . However, there was some level of increasing interaction by some organizations (CNIRD, MALMR, Village Council and YTEPP) as the work of the organizations in the community progressed.

Conclusion

The little initial interaction among organizations and the few attempts at continuing interaction provide fertile ground for the duplication of efforts, evidenced by most of the organizations taking on more or less similar training efforts (e.g. eco-tourism training by YTEPP, CFD and CNIRD). The projects of these organizations appear to be uncoordinated, segmented units of interventions which Cernea (1985) suggested may not generate sustainable development beyond their limited time frame.

However, where some level of interaction existed as was the case between the Village Council /YTEPP/CDF/MALMR in the integrated farming project, the potential exists for the creation of employment and hence sustainable development. This implies that it is necessary that efforts at continued development must include the local decision making body (Village Council) as an active partner, together with those other organisations whose programmes and objectives may impinge on the whole integrated effort.

Importance

The extension approach of the developmental organizations whether governmental or not needs to involve local leaders in the planning and design of local programmes, taking into consideration the particular socio-economic circumstances of the community. Additionally, such organizations need to plan and coordinate with each other to avoid duplication and ensure their efforts are successful. The work done by organizations in the Kernahan community can serve as an important learning experience for developmental organizations in their well-intended efforts to effect sustainable development in rural communities.

References:

Cernea, M. 1985. "Sociological Knowledge for Development Projects" in Michael Cernea (ed.) *Putting People First: Sociological Variables in Rural Development*, Oxford University Press.

Craig. S. 1985. "Political Patronage and Community Resistance: Village Councils in Trinidad and Tobago" in P.I. Gomes (ed.), *Rural Development in the Caribbean*, St. Martin's Press Inc. New York.

Gomes. P.I. 1985. *Rural Development in the Caribbean*, St. Martin's Press Inc. New York.

Lele. U. 1976. "Designing Rural Development Programmes: Lessons from Past Experiences in Africa" in G. Hunter et. al. (eds.), *Policy and Practice in Rural Development*, London, Croom Helm.

Maunder, A. 1972. *Agricultural Extension - A Reference Manual*. FAO. Rome.

Mungroo, N and A. Wahab. 1998. "A Preliminary Study of the Kernahan Community, Nariva" in *The Nariva Swamp: A Gendered Case Study in Wetland Resource Management*, Workshop Report, Centre for Gender and Development Studies, The University of the West Indies, St. Augustine, Trinidad, 12/14th February 1998.

Pieterse Nedereen Jan. 1998. "My Paradigm or yours? Alternative Development, Post Development, Reflexive Development" in *Development and Change*. Vol. 29 No. 2. April 1998. Blackwell Publishers.

Trinidad and Tobago. Ministry of Planning and Development 1982. Town and Country planning Report. Port-of-Spain. Trinidad and Tobago.

4-H AND YOUNG FARMERS CLUBS (4-H/YFC): A CHANNEL FOR PREPARING YOUNG FARMERS FOR THE 21ST CENTURY IN TRINIDAD AND TOBAGO

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ABSTRACT

The 4-H and Young Farmers' Clubs programme has operated in Trinidad under the aegis of the Ministry of Agriculture since 1969. It is characterized by a rapid turnover of voluntary leaders and club members, and no significant increase in the number of community based clubs.

A study involving three surveys was conducted among members, their parents and voluntary leaders to determine the variables that influence 4-H/YFC members' attitudes to 4-H/YFC and their likelihood to continue in 4-H/YFC. Three "attitude to 4-H/YFC" scales were developed using Likert and Factor analyses. All respondents had strong positive attitudes to 4-H/YFC.

The relationships between twenty seven independent variables and members' "attitudes to 4-H/YFC" and their likelihood to continue in 4-H/YFC were investigated. The relationships between twenty nine independent variables and voluntary leaders' "attitudes to 4-H/YFC" and the club's ability to retain its members were determined. Multiple regression analyses were used to investigate relationships between independent and dependent variables.

The following variables influenced members' attitudes to 4-H/YFC: family involvement in 4-H/YFC; level of education; club type; peer involvement; and likelihood to continue in 4-H/YFC.

Members' likelihood to continue in 4-H/YFC were influenced by family involvement in agriculture, members' attitudes to 4-H/YFC, peer influence, and club executive experience.

The following variables influenced voluntary leaders' attitudes to 4-H/YFC: leaders' age; level of commitment; exposure to other youth groups; and years leadership experience.

Leadership experience of the voluntary leader, club executive leadership, level of members' support, and club location influenced the club's ability to retain its members.

INTRODUCTION

The main factors influencing youth participation in voluntary organizations are individual characteristics; social and physical environment; and characteristics of the voluntary organization (Maurer and Bokemeier, 1984).

The 4-H and Young Farmers' Clubs (4-H/YFC) programme in Trinidad and Tobago involves young people between the ages of seven to twenty five years of age who form clubs and participate in individual, club, and/or group projects to learn farming and home making skills, and develop their capabilities and talents. The programme provides educational, economic, social and recreational experiences towards enabling participants to become self directing, productive, and contributing members of society.

It operates using the "project" approach whereby members complete projects in the areas of food production, sewing, cottage industry, handicraft, aquaculture, horticulture, and community service. They are also involved in junior leadership training, seminars, workshops, camps, field trips, exhibitions, achievement days, exchange visits, hikes, marathons and educational competitions.

Within the agricultural context, the programme is envisaged to benefit 4-H members, the national community, and the economy by stimulating new attitudes and interest in agriculture; strengthening primary production; being a useful tool for teaching adults; contributing to rejuvenation of the farming population and increasing the employability of members.

PROBLEM

Despite the perceived benefits to members and the community at large, the 4-H/YFC programme has been characterized by a rapid turnover of club voluntary leaders and club members.

An **attitude** represents both an orientation toward or away from some object, concept, or situation, and a **readiness** to respond in a predetermined manner to these or related objects, concepts or situations. (Hilgard, 1962).

What are the attitudes of the key participants in the 4-H/YFC programme? Do these attitudes influence members' likelihood to continue in these clubs? What are the variables that influence the ability of existing clubs to retain their members?

PURPOSE

1. To examine the "attitudes to 4-H/YFC" of the key actors in the programme (4-H members, their parents and club voluntary leaders) and determine whether these attitudes influence members' likelihood to continue in these clubs.

2. To determine the variables that influence members' attitudes to 4-H/YFC and their likelihood to continue in these clubs.

3. To determine the variables that influence voluntary leaders' attitudes to 4-H/YFC.

4. To determine the variables that influence the club's ability to retain its members.

METHOD

A study involving three surveys was conducted among 4-H/YFC members (65), their parents (65) and 4-H voluntary leaders (63) to examine their attitudes to 4-H/YFC and investigated the relationships between selected independent and dependent variables. Self administered questionnaires were used for data collection.

4-H/YFC members and their parents were from four clubs which were selected based on two main criteria, namely, club type and club continuity. Clubs were of the four naturally occurring club types, namely, primary school based, secondary school based, community based which had started as a secondary school based club, and community based club formed from ex-primary school members. Voluntary leaders involved all those that could be located from throughout the country.

Three "attitude to 4-H/YFC" scales were developed (4-H/YFC members, their parents, and 4-H/YFC voluntary leaders) using Likert and Factor analytic techniques. Development of the scales involved construction of the item set: evaluation of the item set; evaluation of the item set using Likert analyses; assessing scale reliability and validity using Likert and factor analyses; determining the factors in the final scale using factor analyses (R-type factor analysis , using orthogonal varimax rotation); and scoring.

The relationships between twenty seven independent variables and two dependent variables - members' attitude to 4-H/YFC and their likelihood to continue in 4-H/YFC were investigated. The relationship between twenty nine independent variables and two dependent variables - voluntary leaders' attitude to 4-H/YFC and the clubs' ability to retain its members were determined. Multiple regression analyses were used to investigate relationships between independent and dependent variables.

The independent variables investigated included characteristics of the 4-H member (age, age at first enrollment, gender, level of education, and experience in 4-H/YFC); physical environment (location of club, location of residence and home to club distance) ; social environment (type of home, age and occupation of parents/guardians, number of children in family; family involvement in 4-H/YFC and agriculture, parental influence, parental support, parental attitude to 4-H, peer influence, peer involvement in 4-H/YFC, involvement in other groups, community support) ; club environment (club type, club size, level of members participation, level of club success, level of members' support, regularity of meetings, regularity of attendance at meetings); programme attractiveness; attitude to agricultural projects; and voluntary leadership (age, gender, education level, ethnicity, experience in 4-H, attitude to 4-H, family involvement in 4-H, level of commitment, leadership style, personality, ability to motivate people to join 4-H, ability to form relationships with others, and participation in other groups).

Attitude to 4-H/YFC is defined as the sum total of participants' opinion towards the programme - its attractiveness, value, scope, target and stigma. It theoretically represents an orientation towards or away from the programme/club. **Likelihood to continue in 4-H/YFC** is defined as the proposed length of stay in the programme. The **club's ability to retain its members** is defined as the percentage of members that stay to the maximum age limit allowed in the club.

RESULTS

Even though the same twenty six items were used to form the three attitude scales, different items and different factors were determined for the three target groups. These final scales indicate that different "items" and "factors" shape the attitudes of the key actors in the programme. These different groups (members, their parents, and voluntary leaders) are different in their ages, involvement in, expectations of, and responsibilities to 4-H/YFC. These findings suggest that different variables would influence the attitudes and expected behaviors of these groups.

For the members' "attitude to 4-H/YFC" scale, three factors with eigenvalues greater than one were extracted. These accounted for 50% of the variance. These factors consisted of eight items and were named as follows:

Factor one : need satisfaction;
Factor two: stigma, support and scope of the programme; and
Factor three: programme value and support.

For the parents' "attitude to 4-H/YFC" scale, seven factors with eigenvalues greater than were extracted. These together accounted for 63.1% of the variance. These factors consisted of twenty four items and were named as follows:

Factor one : programme value to people;
Factor two: programme attractiveness;
Factor three: programme support;
Factor four: programme stigma;
Factor five: programme target;
Factor six: programme value to members; and
Factor seven: programme status.

For the voluntary leaders' "attitude to 4-H/YFC" scale, five factors with eigenvalues greater than one were extracted. These together accounted for 65.8% of the variance. These factors consisted of sixteen items and were named as follows:

Factor one : programme attractiveness/value to members;
Factor two: need satisfaction, target, and support;
Factor three: programme target;
Factor four: programme value to life; and
Factor five: programme stigma.

All respondents had strong positive attitudes to 4-H/YFC.
On an attitude scale of 8-40, members' and ex-members' scores ranged from 28-40, with 65.5% of the respondents scoring between 35-40. On an attitude scale of 26-110, parents' scores ranged from 89-120, with 72.2% of the respondents scoring between 102-110 . On an attitude scale of 16-80, voluntary leaders' scores ranged from 58-80, with 56.7% of the respondents scoring between 71-80 .

These findings are inconsistent with the apparent perception of 4-H/YFC voluntary leaders and staff that 4-H/YFC members have negative attitudes to 4-H/YFC. Also, the fact that the three main "actors" in the programme have positive attitudes to 4-H/YFC and that different items and factors shape the attitudes of these groups must be considered when planning 4-H/YFC programmes.

Five variables, which together accounted for 39.97% of the variance, were found to influence members' and ex-members' attitudes to 4-H/YFC (Table 1) . These were: peer involvement in 4-H/YFC (12.26%); members' likelihood to continue in 4-H/YFC (11.22%); level of education (8.09%); family involvement in 4-H/YFC (5.32%) and club type (3.08%).

Table 1: **Stepwise multiple regression analyses of the significant continuous and discrete independent variables on members' attitudes to 4-H/YFC**

Variables	Constant	B	t-value*	F value	R^2 change
Continuous					
Likelihood to stay	34.8967	-0.1241	-2.822	7.9620	0.1122
Discrete					
Peer involvement	36.8438	-9.9529	-3.152	9.514	0.1226
Education level	36.4191	-7.6405	-2.636	7.831	0.0895
Family 4-H involvement	37.0955	-5.3030	-1.987	6.142	0.0532
Club type	29.6029	+7.1996	+2.021	5.175	0.0308

Four variables, which together accounted for 36.22% of the variance, were found to influence members' likelihood to continue in 4-H/YFC (Tables 2 and 3). These were: family involvement in agriculture (12.48%);peer influence (9.3%); club executive experience (7.9%) and members' attitude to 4-H/YFC (6.54%).

Table 2: **Stepwise multiple regression analyses of the significant independent continuous variables on members' likelihood to continue in 4-H/YFC**

Variables	B	t-value*	R^2	R^2 change
Family involvement in agriculture	+3.3068	+2.443	0.1248	0.1248
Attitude to 4-H/YFC	-0.7123	-2.237	0.1902	0.0654
Constant = 42.1988; Multiple R = 0.4361;* significant 0.05 level; Overall F value = 7.28				

Table 3: **Stepwise multiple regression analyses of the significant continuous and discrete independent variables on members' likelihood to continue in 4-H/YFC**

Variables	Constant	B	t-value*	F value	R^2

					change
Equation with continuous variables	42.1988			7.9620	0.1902
Discrete					
Club executive experience	53.043	-19.036	-2.813	8.033	0.0930
Peer influence	43.1965	+69.9355	+2.489	7.482	0.0788

The study found that there was a positive relationship between family involvement in agriculture and members' likelihood to continue in 4-H/YFC. Also, the majority of members (67%) were from agricultural families.

Four variables, which together accounted for 69.8% of the variance, were found to influence voluntary leaders' and ex-voluntary leaders' attitudes to 4-H/YFC (Table 4) These were: age (45.2%); number of years leader was involved in 4-H (12.59%); level of commitment (8.03%); and number of youth organizations to which members had option of joining (4%).

Table 4: Stepwise multiple regression analyses of the significant independent continuous variables on voluntary leaders' attitudes to 4-H/YFC

Variables	B	t-value*	R^2	R^2 change
Leaders' age	-7.9069	-8.670	0.4520	0.4520
No. yrs in 4-H/YFC	+1.0498	+4.846	0.5779	0.1259
Leaders' commitment	-1.8202	-3.063	0.6582	0.0803
Youth exposure to other groups	-1.3998	-2.600	0.6982	0.0400
Constant = 98.8521; Multiple R = 0.8356;* significant 0.05 level; Overall F value = 29.498				

Four variables, accounting for a total variance of 54.63% were found to influence the clubs' ability to retain its members (Tables 5 and 6). These are: club executive leadership (20.93%); years leadership as a voluntary leader (14.16%); club location (13.17%); and level of members' support (6.57%).

Table 5: Stepwise multiple regression analyses of the significant independent continuous variables on club's ability to retain its members

Variables	B	t-value*	R^2	R^2 change

Years as voluntary leader in 4-H/YFC	-19.128	-2.644	0.1416	0.1416
Level of members' support	+50.629	+2.096	0.2073	0.0657
Constant = 195.82; Multiple R = 0.4554;* significant 0.05 level; Overall F value = 23.3863				

Table 6: **Stepwise multiple regression analyses of the significant continuous and discrete independent variables on members' likelihood to continue in 4-H/YFC**

Variables	Constant	B	t-value*	F value	R^2 change
Equation with continuous variables	195.82			23.3863	0.2073
Discrete					
Club executive experience	126.65	383.87	3.04	13.805	0.2093
Club location	9.577	143.49	1.96	10.155	0.1317

EDUCATIONAL IMPORTANCE

All 4-H and Young Farmers' Clubs are involved in agricultural projects. The strong family influence of 4-H members with family involvement in agriculture can be exploited by Extension to foster and promote 4-H and Young Farmers' Clubs and renew interest towards continuity in agriculture among the youth. Training of the youth can also be a useful tool for teaching adult farmers, thus benefiting the community as a whole.

REFERENCES

Hilgard, E.R. 1962. Introduction to Social Psychology. 3rd ed. New York: Harcourt, Brace & World Inc.

Maurer, R.C. and Bokemeier, J.L. 1984. How Mom and Dad Influence Youth Participation. Journal of Extension. 22 (March/April) : 19-23.

Session C Extension Evaluation

March 22, 1:00 - 3:00 p. m.

Session Chair - Ronald W. Shearon

Location: Laventille Room

TITLE:	Participatory Monitoring and Evaluation: A Strategic Tool for Managing Sustainable Development in Rural South Africa
AUTHOR:	P.N. Ewang and Ms. S. M. Mtshali University of Zululand DISCUSSANT: Lynn Jones
TITLE:	Changing Evaluation Paradigms for Agricultural and Extension Education in the 21st Century
AUTHOR:	R. David Mustian North Carolina State University DISCUSSANT: Lynn Jones
TITLE:	Measuring Extension Performance: A Case Study of the Irish Agricultural Extension Service
AUTHOR:	Suzanne O'Neill, Anthony Leavy, Alan Matthews Agricultural & Food Development Authority, Dublin, Ireland DISCUSSANT: John Vreyens
TITLE:	Influence of the Polish/American Extension Project on the Post-Communist Transition of the Polish Extension System
AUTHOR:	Henry Bahn, Donald E. Evans US Department of Agriculture, Pennsylvania State University DISCUSSANT: John Vreyens

PARTICIPATORY MONITORING AND EVALUATION: A STRATEGIC TOOL FOR MANAGING SUSTAINABLE DEVELOPMENT IN RURAL SOUTH AFRICA

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Improving the quality of life of the people with particular attention to those in rural communities is the fundamental goal of rural development. While many efforts such as introduction of hybrid seeds, improved fertilizers and pesticide packages have been effective in many areas, their benefits unfortunately, have not been replicated in most rural areas. This lack of replicable success has resulted in the quest for alternative paradigm of development thinking. The 1980s have witnessed a searching, re-examination of the nature and purpose of development, and this re-examination has correspondingly influenced practice.

The central issue of this search for development alternatives was that, development has become capital centred as opposed to people centred; it had by-passed or even marginalised people in its concern to build and construct. For too long development has been concerned largely with seeking to build national productive and physical capacities and measuring success with broad statistic and quantitative increases. Schumacher (1973) argued that development did not start with these physical goods but "with people and their education, organization and discipline. Without these three all resources remain latent, untapped potential". Development must be seen as a process of humanization and people must be central to any kind of development process. The following are two very contrasting views of development that have been debated over the past decades and led to the re-thinking and the current shift in the 1980s:

"Rural development is clearly designed to increase production and raise productivity. Rural development recognizes, however, that improved food supplies and nutrition, together with basic services such as health and education, can not only directly improve the physical well being and quality of life of the rural poor, but can also directly enhance their productivity and their ability to contribute to the national economy" (World Bank, 1995).

"Rural development is the participation of people in a mutual learning experience involving themselves, their local resources, external change agents and outside resources. People cannot be developed, they can only develop themselves by participation in decision and cooperative activities which affect their well-being. People

are not being developed when they are headed like animals into new ventures" (Nyerere, 1968).

The latter quotation is a succinct statement of what is variously referred to in text as "alternative development", people centred development or "participatory development". Scholars, such as Rahman (1981), Galijart (1981), Bhasin (1985), Roling (1985), Fuglesang and Chandler (1986), Chambers (1983), FalsBorda (1987) and Mayfield (1986), have contributed to the building up of our theoretical understanding of alternative approaches to development. These scholars have not coalesced, however, around only single definition or model but have stressed the need to adapt the basis and approach of development to the social, political and economic context of the people involved. None of them argues that improvement in the physical environments of the rural poor (eg. Better water supply or improved health facilities) are not necessary; indeed, many vividly depict the grinding poverty characteristic of the lives of millions of rural people. Ewang (1995) puts two arguments as points of departure regarding poverty. First, poverty is structural and has its roots in the economic and political conditions which influence rural people's livelihoods. In order to begin to tackle this poverty, it is important to develop the abilities of rural people to have a say in, and to have some influence on the forces which control their livelihoods. Second, development programmes and projects have largely by-passed the vast majority of rural people; there is a need, therefore, to rethink forms of development intervention to ensure that this neglected majority have a chance to benefit from development initiatives.

CONTEXTUAL DEBATE

It would be wrong, to assume that the debate for greater people's participation in development are based purely on idealistic, humanitarian or egalitarian grounds. There are a number of substantiative arguments for and against "participation" as an essential ingredient in sustainable projects. Planners argue that there are potential risks and costs implicit in greater people's participation. These include:

- Project start-up delayed by negotiations with people;
- Increases in staff required to support participation;
- The possibility that, when consulted, people might oppose a project
- Unpredictable participatory methodologies and;
- Over-involvement of less experienced people.

Indeed, a World Bank (1988) study suggested that governments might prefer rural people to participate only in project implementation since their involvement in project identification and assessment might give rise to increased expectations. Furthermore, there have been tendencies for scholars to be dismissive of many of the arguments for participation as being merely "Lofty Sentiments" or "Popular Faddishness". Midgeley (1986) refers to the "emotionally appealing case for participation", but argues that it is important to disentangle ethical issues from theoretical and practical considerations. Uphoff (1986), Chambers (1986) both refer to a state of "Pseudo Participation" and rightly argues that in many projects the participation is more illusory than real. Ewang (1995) argues that in many rural development projects in South Africa, participation is stronger in rhetoric than in practical reality; that there is a good deal of lip-service to the notion of participation but less commitment to the changes in direction and style that would be required to implement it. Participatory processes in rural development are important and critical for project:

- Efficiency;
- Effectiveness;
- Self-reliance;
- Coverage; and
- Sustainability

Uphoff (1986) in his text suggests a number of reasons why government might gain some net benefit from promoting participation, despite political cost:

- More accurate representative information about the needs, priorities and capabilities of local people; more reliable feedback on the impact of government initiatives and programmes;
- Adaptation of programmes to meet local conditions so that scarce resources can be employed more efficiently;
- Lower cost of access to the public for agricultural extension programmes, nutrition, education, immunization, supervised credit through local organizations and institutions;
- Tapping local technical information that can otherwise be costly to obtain or to learn about the fact that rural people have more technical expertise than usually recognized;
- Mobilization of local resources to augment or even substitute for central government resources;
- Improved utilization and maintenance of government facilities and services; and
- Cooperation in new programmes, which is more likely to occur when local organizations having the confidence of rural people share responsibility for the innovation (pp 425-426).

THE CHALLENGE OF PARTICIPATION

Underdevelopment being a function of physical impoverishment is also a state of mind and understanding that state of mind or as a level of consciousness, is critical in bringing about change. In this respect broad, sweeping commitment to processes such as "participation" need to be understandable in relation to the powerful contextual barriers which perpetuate people's isolation or lack of involvement in development. Freire (1972) wrote powerfully of the "culture of silence" and said that the rural people had "no voice, no access and no participation" in development activities. Poverty is not just a lack of physical resources for development; it also implies powerlessness or the inability to extent influence upon the forces which shape one's livelihood.

Consequently, the challenge to a concept as participation is to seek to make contact with and involve rural people whose lives are dominated by development activities. Participation can not merely be proclaimed or wished upon rural people; it must begin by recognizing the powerful, multi-dimensional and, in many instances, anti-participatory forces which dominate the lives of rural people. Centuries of domination and subservience will not disappear overnight just because scholars have "discovered" the concept of participation. The practice of participation does not occur in a vacuum; on the contrary it is susceptible, in both a negative and a positive way to a whole range of influences. Since this paper is dealing with a particular aspect of the participatory process (monitoring and evaluation), obstacles to the whole process will be dealt with under broad headings:

STRUCTURAL OBSTACLES

The political environment within a particular country can in some circumstances be supportive of this process; equally in different circumstances, it can constitute a fundamental obstacle.

Administrative Obstacles

Centralized governments encourage centralized administrative structures which by their very nature, are major obstacles to people's participation. These administrative structures retain control over decision-making, resource allocation , information and the knowledge which rural people will require if they are to play an effective part in development activities.

Social Obstacles

The most frequent and powerful social obstacle to the participation of rural people in development projects is a mentality of dependence which is deeply and historically ingrained in their lives. The lack of leadership and organizational skills, and consequently inexperience in running projects or organizations leaves most rural people incapable of responding to the demand of participation. This state of affairs has always been reinforced in many instances by handouts and actions which have not encouraged rural people to take initiatives resulting in marginalization. The critical issue to stress here however, is that participation, whatever form or direction it takes, cannot be regarded as some physical or tangible input into a development project. Participation occurs within frameworks and will be influenced by the economic and social consequences or circumstances that direct that framework simple proclaimation of participatory commitment to a project will not ensure its practice.

PARTICIPATORY MONITORING AND EVALUATION

A Participatory Monitoring and Evaluation is by definition, one that uses the project staff and project beneficiaries as the evaluators. Given the qualitative nature of the process of participation, the evaluation demands that local people be directly involved. In this respect, it is argued that the technique of Participatory Monitoring and Evaluation (PME) would be appropriate to the evaluation of participation. The author, however wish to caution that both are not the same, the evaluation of participation is the evaluation of a discrete process, while Participatory Monitoring and Evaluation (PME) is a form or technique of evaluation which is relevant in monitoring and evaluation exercises across the sectors in rural development. Furthermore, participatory evaluation as a technique is often examined in the literature within the overall concept of participatory action research. Research and evaluation are both essentially supportive dimensions of development projects practices, and indeed are at different ends of the project continuum. Rahman (1982), Hatch (1983) and Fernandez and Tandon(1986), review both concepts together and effectively argue that they are dimensions of the same process.

THE CONCEPT OF PME

Participatory Monitoring and Evaluation is a concept whose time has come. It is an exciting, adaptive, dynamic and creative approach to sustainable and appropriate rural development. Participatory Monitoring and Evaluation "flips" the traditional top-down development approach where outsiders first decide community objectives, then monitor and evaluate to adjust these within the project time frame. PME encourages the project team and the community to work as partners because it is built on two way communication, clear messages, problem solving techniques, and a joint commitment to what "works" for the community. PME focuses on the relationship between the field staff and the community.

Too often monitoring and evaluation becomes a snap-shot exercise conducted by people not directly related to the project and in which the local people are seen as the objects of the exercise. Participatory Monitoring and Evaluation not only see people as the subject of the exercise but see the process occuring over a period of time.

METHOD FOR PARTICIPATORY MONITORING AND EVALUATION

The following steps provide the method for PME. These steps are followed by the beneficiaries:

1. Establish the purpose of PME. Why is PME useful in the community? Why is PME useful for these activities?

2. Establish what will be monitored (both technical and socio-economic data) to establish indicators, the beneficiaries should go over the activities that have been agreed upon using "brainstorming".

3. Establish how the variables will be monitored. The beneficiaries choose the terms of measurement.

4. Establish who will monitor and conduct the evaluation. It is important that the beneficiaries have a clear idea of who is responsible for different monitoring activities. Consistency in monitoring information can be encouraged by good field staff follow-up during extension visits.

5. Establish when the monitoring will be done. Should it be seasonally? Monthly? Every six months?

6. Establish the tools that will be used to monitor. Monitoring tools should be selected primarily because they appropriately relate to the project's activities. However, cultural, social, economic and educational factors operating in the community should be taken into account. Tools must be commensurate with project and beneficiary resources (time, skills and materials).

7. Establish who will want the information from PME and how it should be presented. Should the beneficiaries share their information with other communities with similar activities? Should the beneficiaries share the information with their own community or among each other?

When PME is implemented it will give, throughout the life of the project:

1. Key indicators which will monitor activities / objectives on a consistent basis;
2. Tools with which the community can monitor;
3. A planned period to formally analyze and discuss the information that has been gathered through monitoring;
4. Information to guide the project. It will indicate whether the project should change, re-organize, re-think, delete an activity, or remain on the same course.

BENEFIT OF PARTICIPATORY PROCESSES

Participatory monitoring and evaluation have the following benefits:

1. Provide an entry point for trying participatory approaches to determine future use.

2. Assist in decision-making.

3. Increase the community's analytical skills and awareness of their problems, needs and priorities.

4.Assess performance. Information can be used to identify weak points within a project, and to modify activities to make the project more effective.

5. Allocate resources. PME can reveal that certain activities are more effective than others, helping to assure that resources are channeled accordingly.

6. Develop skills. PME reveal community skills that were undervalued, and develop skills that are needed to support the project.

7. Justify project inputs. PME allows for assessment of whether project benefits have warranted project costs and inputs.

8. Determine strategies. PME may reveal that activities were not effective in meeting the objectives, more appropriate approaches or activities can be recommended.

9. Create new knowledge and understanding. PME can help people share valuable lessons that they have learned from field situations.

10. Assure project staff, researchers, government planners and donors that any inputs they make have relevance in the community situation.

Choudhary and Tandon (1988) characterized the central concept as follows:

The central characteristic of Participatory Monitoring and Evaluation is that people involved in a given development programme or organization, both as implementors and as beneficiaries, start participating in and take charge of the evaluation efforts. The control over the process of evaluation remains in the hands of those who are developing, implementing and benefiting from the programmes. Thus, the evaluation serves the interest of furthering the benefits and improving the programmes and organizations in development at the base and not those who are intending to control it from the top. In a way, Participatory Monitoring and Evaluation is an attempt at redefining and reaffirming development as a "bottom-up", "people-centred", "people controlled" process and not a technocratic top-down intervention (1988, p.8).

CONCLUSION

As we move away from the 1990s, the paradox is that on paper at least there is a fairly broad consensus around the concept of people's participation in development, the arguments for it, its importance and its key parameters. The fundamental divisions appear when the concept is put into practice. Historical project evaluation datas regarding project success has shown that most top-down projects have not always made the intended impacts to the beneficiaries. Participation is a basic instrument for sustainable rural development as the benefits identified in the text indicate.

People's participation is essentially to do with economic and political relationship within the wider society; it is not just a matter of involvement in project activities. Development project planners need to recognize this wide dimension, to support and facilitate it and not restrict it within their own functional limits. Attempts have been made to clearly draw a distinction between participatory development and participation in development. The crux to understanding the practice lies in this distinction. Rural development that will critically address livelihood is that which beneficiaries are partners of the whole process from start to finish.

REFERENCES

Bhasm, K. 1985. Towards Empowerment. Rome, FAO.

Chambers, R. 1983. Rural Development: Putting the last first. Longman, London, England.

Chamber, R. 1986. Shortcut methods in social information gathering for rural development projects In RRA. Khon Kaen U niversity, Bangkok, Thailand.

Choudhary, A. and Tandon, R. (1988). Participatory evaluation: issues and concerns. New Delhi, Society for Participatory research in Asia.

Ewang, P. 1995. Challenging conventionalism for sustainable agricultural research, extension and rural development. SASAE conference paper.

Fuglesang, D. ; Chandler, D. (1986). Participatory Process: What we can learn from Grameen Bank, Bangladesh. Oslo, Norad.

FalsBonda, O. 1988. Knowledge and people's power. New Delhi, Indian Social institute.

Freire, P. 1972. Cultural action for freedom. London, Writers and Readers Publishing Cooperative.

Fernandez, W. ; Tandon, R. (1986). Participatory Research and Evaluation. New Delhi, I.S.I.

Fernandez, W. (ed), 1981. "People's participation", in W. Fernandez (ed): *Development* with people. New Delhi, Indian Social Institute.

Galijart, B. 1981. Participatory development Projects: Some conclusions from research in Sociologia Ruralis (Assen, Netherlands, Vol. 21, No. 2, pp 142 – 159)

Haleh, J. 1983. A manual for participatory evaluation in community based enterprises. New York Technoserve Inc.

Midgeley, J. et al. 1986. Community participation, social development and the state. London, Methuen.

Nyerere, J. 1968. Freedom and Socialism. Dar es salaam. Oxford Univerity Press.

Rahman, Md.A. 1981. Bhoomi Sena. Genera ILO.

Rahman, Md.A. 1982. The theory and practise of paricipatory action research. WEP working paper. Geneva, ILO.

Roling, N. 1985. Five essentials for the creation of active utiliser systems. Amsterdam, RTI.

Schumacher, E.F., 1973. Small is beautiful. London, Abacus.

Uphoff, N. 1986b. Approaches to participation in agriculture and rural development in M. Bamberger (ed): Readings in community participation (Washington D.C. EDI-World Bank)

World Bank, 1975. Annual Report. Washington D.C.

World Bank, (1988) Rural Development: World Bank Experience. Washington D.C.

CHANGING EVALUATION PARADIGMS FOR AGRICULTURAL AND EXTENSION EDUCATION IN THE 21ST CENTURY

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Port of Spain, Trinidad

by

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Abstract

The traditional paradigm previously used to judge the effect of agricultural and extension programs was a cataloguing of program inputs and subsequent outputs. Much emphasis was placed on the process of program delivery and implementation. In fact, a great deal of attention was directed to obtaining and describing program activities. Data collected, usually after the program was completed, became a means of management control, and were the major inputs for program reports.

The paradigm explored in this paper is built on the premise that agricultural and extension educators need to focus on program models where outcomes are the basic function. Emphasis is placed upon results. Goals and targeted outcomes are reflected in program objectives. The performance paradigm includes ongoing data collection, an emphasis on organizational/agency improvement, and the ultimate outcome of using results.

CHANGING EVALUATION PARADIGMS FOR AGRICULTURAL AND EXTENSION EDUCATION IN THE 21ST CENTURY

Introduction

In revisiting Extension before the 21st century, agricultural and extension educators must examine where agricultural and extension programs have been successful and where crucial opportunities await consideration.

The last decade of this century, the nineties, will probably be identified as the decade of accountability for public programs. In this case, public programs are those programming efforts that are underwritten in total or part by funding agencies outside the targeted area. This paper examines the approaching call for accountability for quality programs and their impacts from program shareholders and decision makers.

Competition for scarce resources undermines public support for increased spending and creates the context for systems of accountability which reflect a well-developed organizational strategic plan with realistic performance measurement efforts.

Incorporating strategic plans into programming efforts and linking vision and mission to the budgetary process by funding programs to achieve desired behavioral change in clientele provides stakeholders and decision makers the power to hold Extension accountable for resources, both material and personnel. Extension will be called upon to disclose relevant and reliable information about our efforts to effect desired changes in our clientele. Extension's decision makers will have the power to judge our efforts and to take action based on their judgments.

Purpose of Paper

What does performance measurement entail for Extension as an educational organization? Basically, performance measurement is the process that Extension will follow to objectively measure how well we are meeting our stated objectives. Performance measurement includes clarifying and agreeing on organizational goals, developing performance indicators to measure progress toward goals, identifying and collecting benchmark data, setting targets for future performance, and, at times, gathering actual data to compare to targeted goals.

Traditional ways that organizations have "done business" have focused on program inputs and outputs. Elaborate systems have been developed to count participation in activities and computerized templates in which to report numbers of people who can be placed in designated output boxes, e.g. number of wells tested, food safety practices followed, volunteers recruited, etc.

Performance measurement issues a call for program impacts. A major change is the emphasis on results rather than on the programming process. The traditional approach had the end of satisfying reporting requirements while the new paradigm calls for results, i.e., performance as the bottom line. Program impacts include: adoption of improved varieties of soybeans, adoption of best management practices of pesticide use, adoption of no till practices, increased farm profit, and higher market prices through adoption of taught practices.

The purpose of this paper is to identify and describe a performance measurement paradigm which has utility for agricultural and extension educators as we approach the 21st century. An evaluation model is developed and presented to capture the successes of agricultural and extension programs throughout the world.

Issues

One might characterize the changes in paradigms as follows:

Traditional Paradigm	**Performance Paradigm**
Inputs, outputs	Outcomes
Process	Results
Program activities	Program objectives
Collecting data after program	Ongoing data collection
Management control	Organizational improvement
Reporting numbers	Using results

The pursuit of quality agricultural and extension programs involves the identification of outcomes (impacts) for each programmatic element. These impacts should reflect the organization's commitment to bringing about intended changes in our clientele (customers). Objectives will not only reflect desired results but also show progress or accomplishments through the life of the program. The strength of performance measurement and performance-based budgeting is the emphasis on accomplishments in addition to inputs, outputs, and numbers.

Evaluation Frame of Reference

The evaluation process is best described as a comprehensive one. Thus, evaluation encompasses the total programming process. It is important to assess the fit between a need or issue and the program which has been developed to satisfy that need. Is it possible for a program to be in place that does not address a need? The answer is yes in that sometimes we zealously plan and implement programs which will not bring about desired change in individuals, learner groups, or institutions but will be a response to a social problem which is too abstract or nebulous to be addressed.

Good measurable objectives are the means to move persons, learner groups, or organizations from Point A to Point B. It is crucial for the evaluator to determine if program objectives are focused on what the learner will do, the conditions under which the learning takes place, and the standards of judgment used to conclude whether change has taken place. Too often programmatic objectives focus on what the program coordinator or organization will do rather than what the learner will do.

Once a program is in place, it is important to ascertain whether the program has been implemented as planned, whether objectives are realistic, and whether the appropriate learners are involved in the program. It is also most important that we determine whether the program participants are really the targeted audience.

What is a quality program? The answer lies in how we address the following five questions. First, where is the program going? How will it get there? How will we know when it gets there? Are there viable alternatives to this program? What are long-term consequences of this program? We should be positioned to easily answer the question of where is the program is going for we have laid the foundation when we identify the need for the program. If a need is the difference between 'what is" and "what could be", then we know where the program is going when we answer the question "what could be?"

Program delivery strategies are the vehicles for how a program will get where it is going. Far too often we evaluate activities, I.e., program delivery strategies, rather than programs themselves. It is important for us to match delivery strategies to targeted individuals so that we are matching learning opportunities to individuals who have preferred learning strategies which can impact the success of the program.

How do we know when the program gets there? Perhaps the questions of "so what?" or "what will success look like?" are more easily recognized in terms of knowing program successful outcomes. Particularly for the organization, it is important for us to ascertain whether our programming efforts could best be served elsewhere in that other organizations or agencies may be better positioned to address some needs/issues. Of equal importance is the need to address the issue of long term consequences of programs.

Bennett's Hierarchy of Evidence

Claude Bennett proposed an evaluation model which he entitled "Reflective Appraisal of Programs". In his model, Bennett identified seven cumulative levels of evidence which are associated with extension programming. A brief description of each level follows.

Level 1. Inputs: Inputs are the resources brought to the program. Program resources include the number and disciplinary background, educational preparation, and relevant experiences of paid staff (both professional and paraprofessionals) and volunteers assigned to plan, design, implement, and evaluate a program. Resources also include educational materials and the infra structure necessary for programming and including support for organizational maintenance, communication technologies, and transportation. Examples of inputs include: time invested, costs, resources used, and volunteers.

Level 2: Activities: Activities are all those behaviors that the professionals, paraprofessionals, and volunteers do in planning, designing, implementing, and evaluating a program. A major function of activities is to transfer content or subject matter to program participants through direct contact, individualized electronic technologies, and/or mass media. Examples include writing newsletters, developing radio and television announcements/programs, conducting needs assessments, recruiting volunteers, setting up on-farm demonstrations, conducting subject matter meetings, publicizing meetings, workdays, or tours, and delivering program activities.

Level 3. Participation: Program participants include individuals, families, groups, organizations, or communities. It is important to identify both the number of participants and the intensity of their involvement in program activities. Intensity of participation can vary from an hour meeting to participation over a number of years. Involvement of participants in program activities can lead to increased knowledge, attitudes, skills and aspirations and the adoption of best management practices. Behavioral change may depend on sufficient continuity, frequency, and intensity of program participation. In most cases it is important to maintain a list of program participants with mandated and anticipated/needed demographic characteristics.

Level 4. Reactions: Program participants will react to program activities in which they participate. Those reactions can be both negative and positive in content. Reactions represent program participants' interest in topics presented, their acceptance of activity leaders, and their attraction to program delivery strategies and materials of the program activities. It is important that educators give program participants the opportunity to give feedback on program activities. Program participants will give reactions on comfort of the educational setting, importance of the topics, appropriateness of topics and materials, quality of visual aides, and skills of program activity presenters.

Level 5. KASA: Changes in knowledge, attitudes, skills, and aspirations of program participants are measured at this level. Changes in knowledge answers the question of "what do you know?" Measurement of attitudes allows the educator to ascertain how program participants feel about the content of the program. The issues with skills is to increase the skills that an individual has in a given area. Aspirations pose the question of what would you like to do or what do you intend to do given the opportunity. Knowledge gained may be applied to adapting or selecting practices taught in the program. Changes in attitudes may increase interest in or attraction to recommended practices or technologies. Increase in skills improves the capability to use recommended practices, and increasing aspirations may enhance the participant's determination to use recommended practices. Changes in KASA occur as people react positively to their involvement in program activities.

Level 6. Practice Change: Practices are patterns of behavior, procedures, or actions. Extension programs influence participating individuals, groups, organizations, and communities to adopt practices that achieve program objectives/goals. The adoption of these practices occurs as program participants apply relevant knowledge, attitudes, skills, and/or aspirations.

Level 7. End Results: Improvements in social, economic, and environmental conditions are the end results, impacts, or benefits of programs. Social, economic, and environmental needs/issues decrease as they are prevented, checked, reduced, or solved by use of recommended practices. End results may also be conceptualized as social, economic, or environmental consequences of the adoption of best management practices taught in Extension programs.

Generally, the first four levels of Bennett's hierarchy are related to management objectives. In other words, inputs, activities, people involvement, and people reactions are all necessary elements in order for a program to be planned, designed, implemented and evaluated. Levels 5 to 7 are conceptualized as resultants of behavioral objectives. In behavioral objectives, the primary interest is in what the learner does, the conditions under which the learning takes place, and the standards of judgment about what the learner does. It is in levels 5 through 7 that we measure change in individuals, groups, organizations, and communities. Levels I through 4 reflect what we do in order to "have a program".

Framework for Developing Measures of Progress and Impact Indicators

The first major step in developing an evaluation model to include accomplishments of Extension programs is the clear delineation of need among some individuals or groups or persons.

When individuals are asked to identify needs or issues that require a planned response in the form of a program, they often will identify broad social problems such as health, crime and safety, juvenile delinquency, teenage parents, better education, etc. They have identified issues or matters of wide public concern, but these identified needs/issues are generic, global, and difficult to quantify so that there can be an organized Extension response. Ralph Tyler has suggested that we think about a discrepancy as a need. That discrepancy is the difference between what is and what could be. Thus, a need is defined as the difference between what is and what could be among members of a group that we intend to work with. For example, a young farmer may have many traditional farming experiences but no real experience with recent technological innovations. The difference between experiences reflects a need if the young farmer is to compete in a global economy.

In delineating what is, we describe the current situation among potential clientele. In describing the current situation, we want to identify where the person is, I.e., what is the benchmark before the program starts that can be compared to behaviors after a program is completed. In building the case for a needed program, we describe possible future options. Those future options can be described as answers to the question: "Where is the program going?" What would be the desired end result for this need? Ultimately, we must also ask the question of whether the proposed response to a need falls under the mission of the organization.

One other perspective to be considered is whether a need is to be identified by a potential client or does the professional sometimes identify needs. There are occasions when the individual will not perceive a discrepancy in his/her behavior, but a professional, because of experience or knowledge base, can identify a positive change for individuals. For example, individuals could not anticipate the dangers of a critical level of radon in the home, but professional researchers and educators would be in a better position to identify the need for corrective action.

Programs are planned and implemented to respond to a need. A program may be defined as a series of planned interrelated activities, using available resources, which are implemented to bring about change in individuals, groups, or communities.

Objectives are the major components of programs which identify the changes needed to move clientele from one point to another. Objectives represent measurable behavior of learners so that if the objectives are met, then the learners would have changed behavior. Meeting an objective is similar to answering the question of "so what?" or "what does success look like?"

Program objectives specify expected changes in learners, groups, or communities in terms of changes in knowledge, attitudes, skills, or aspirations. Objectives may also specify implemented practices by program participants which will be identified as program successes. Ultimately, social, economic, and environmental impacts or outcomes are the intended results that occur as a function of adopting practices taught in Extension programs.

In the age of accountability, it is always important to evaluate whether programs benefit individuals or society or both.

The Case of the North Carolina Cooperative Extension Service

In 1995, the North Carolina Cooperative Extension Service began a new, four-year program entitle "Foundations for the Future". This plan included twenty state major programs. The programs were statewide. In the latter part of 1996, a long-range task force which was charged with coordinating the twenty programs recommended to the organization's Administrative Council that rather than stopping and planning a new program every four years that the organization endorse a dynamic, changing program process. Such a dynamic plan would enable all parts of the organization to assess the status of programs and make changes where ever and whenever changes were needed.

In the Foundations for the Future program, the twenty state major program teams developed a total of seventy-six objectives and appropriate measures of progress and impact indicators for each objective. The organization adopted the evaluative plan where accomplishments in the programs would be measured using the top three evidence levels of Bennett. Changes in knowledge, attitudes, skills, and aspirations and adoption of best management practices were conceptualized to be measures of progress. Outcomes or end results characterized as social, economic, or environmental consequences of programming were developed as impact indicators.

Each state major program team consisted of twelve to twenty-four persons. Each team had co-chairs with one co-chair a field faculty member and the other co-chair a state faculty member. Teams were approximately equally distributed between field and state faculty members. Each team had the responsibility of developing appropriate measures of progress and impact indicators for their program.

With two years of experience with this system, state major program teams have begun to refine measures of progress and impact indicators. The major difficulty has been with impact indicators where in the beginning, outcomes were identified but there has been considerable difficulty in measuring the outcome or in identifying research to base worth or value of the impacts upon. Teams continue to refine both measures of progress and impact indicators so that they are in alignment with the program's objectives.

All administrative units in the organization are currently engaged in an environmental scanning process to ascertain whether programs and objectives continue to be viable with the ever changing context of Extension. This organization wide process will provide important information for program teams to use in adjusting programs and in adjusting measures of progress and impact indicators.

Examples of Measures of Progress and Impact Indicators

1. Agriculture and the Environment was one of the twenty Cooperative Extension Major Programs initiated in the fall of 1995. A major objective of the statewide program was: Livestock, poultry, and fish producers will adopt and promote economically and environmentally sound practices to manage water and waste materials for the purpose of improving air and water quality protection.

   Measures of progress for this objective included

   : number of land application operators certified number of acres with soil analyzed tons of feed analyzed tons of waste composted

   Impacts included:

   tons of soil erosion (loss) reduced pounds of nitrogen used pounds of phosphorous used dollar value of waste products

2. Another major state program was: Animal Production and Marketing Systems. A major objective was: Producers of livestock, poultry, and aquatic species will select, adopt, and successfully implement practices or enterprises that will achieve individual and family goals related to profitability and quality of life.

   Measures of progress for this objective included: increased knowledge of nutrition practices among producers adoption of dairy nutrition practices adoption of beef cattle reproduction practices adoption of best physical facility practices for hogs adoption of best marketing practices for sheep and goats

   Impacts included:

   dollars gained among dairy producers who adopted best nutrition practices
   dollars gained among beef cattle producers who adopted best breeding practices
   dollars gained among horse producers who adopted best marketing practices

Educational Importance

A computerized, web-based reporting system has unified all the reporting requirements for the total organization. Each of the twenty state major programs and its objectives are displayed in template format. For the most part, an individual can easily report accomplishments in the reporting system by inserting appropriate numbers, e.g., number of farmers adopting no till practices, in the reporting template. Obviously the reporting system is made up of more than accomplishments (measures of progress and impact indicators), for the individual can report success stories, number of contacts, etc.

Users of this system of measures of progress and impact indicators are quite satisfied with the ease of reporting program successes. The major obstacle yet to be overcome is the development of instrumentation and measurement techniques for the field faculty to use in evaluating local and state programs. Standardization of instrumentation will facilitate the aggregation of data and the determination of worth and value of Extension programs.

As Richardson (1998) pointed out, organization/program relevance as to value to constituents and society is the norm for questioning the value of both public and private organizations and agencies. Organizations and agencies must be accountable to the entities questioning the worth of programs. Agricultural and extension educators have key roles to play in this process.

Agricultural and extension educators have to address the important question of attribution of impact to programs (Verma). Agricultural and extension programs will be reviewed by decision makers and funders to justify allocation of funds and demonstrate that effective, need-based programs are in place. Agricultural and extension educators must address the expectation that agricultural and extension programs do bring changes in individuals, families, and communities. The expectation is for improved economic, social, and environmental results for those groups.

BIBLIOGRAPHY

Bennett, C. (1975). Up the Hierarchy. Journal of Extension. 13:7-12.

Bennett, C. (1982). Reflective Appraisal of Programs: An Approach to Studying Clientele-Perceived Results of Cooperative Extension Programs. Ithaca, NY. Cornell University.

Bennett, C. (1994). A New Interdependence Model. Journal of Extension Systems. Volume 9, July.

Congress of the United States (11993). Government Performance and Results Act of 193 (P.L. 103-62). Washington, DC.

Hatry, H. Winnie, R. and Fisk, D. (1981) Practical Program Evaluation for State and Local Governments. Washington, DC. The Urban Institute Press.

House, R.H. (1980). Evaluating with Validity. Beverly Hills, CA. Sage Publications.

Mayeske, G.W. (1994). Life Cycle Program Management and Evaluation: An Heuristic Approach. Washington, DC. Extension Service, USDA.

Mortvedt, M. (1994) Programming for Accountability. Manhattan, KS Kansas State University. Cooperative Extension Service.

Richardson, J.G. (1998) Accountability Dynamics in a State of Change. Proceedings of 32nd Conference, South African Society for Agricultural Extension, East London, South Africa, May, 1998.

Rossie, H.R. & Freeman, H.E. (1993). Evaluation: A Systematic Approach. Newbury Park, CA. Sage Publications.

Verma, S. The Attribution Question in Extension: A Discussion of Program Evaluation Strategy. Proceedings of 32nd Conference, South African Society for Agricultural Extension, East London, South Africa, May 1998.

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Measuring extension performance: a case study of the Irish agricultural extension service

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Abstract

This paper presents a methodology for the evaluation of extension and training expenditure. A stochastic production frontier approach is used to estimate technical inefficiency effects for individual farms using cross section data for Irish farms. The level of technical inefficiency is regressed on a number of farm specific factors including contact with the extension and training service. This approach is applied to a sample of 152 Irish farms using data for 1994. The results suggest an inconclusive impact for extension contact. Possible caveats to the analysis are explored and directions for further work indicated.

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Introduction

Public budgets for agricultural extension and training (E&T) are under pressure everywhere, in both developed and developing countries. In this context, extension leaders are increasingly required to show 'value for money' when arguing the case for increased funding, or even its maintenance, and policy-makers demand evidence of the difference made by E&T expenditure in comparison with other uses of public funds. The evaluation of E&T can emphasise *effectiveness* (whether its objectives have been achieved or not) or *efficiency* which, in addition, seeks to compare the value of the impact achieved with the cost of the resources expended. Efficiency calculations are often summarised in terms of the rate of return achieved on the investment made in E&T. This paper presents a method which might be applied to evaluating the efficiency of E&T expenditure and assesses it in the light of a case study applied to Irish conditions.

Two broad methods have dominated economic approaches to measuring E&T efficiency (Birkhaeuser, et al., 1991). In the experimental approach, the performance of groups of farms which have contact with the advisory service is compared with the performance of farms which have not had contact. In a pure experiment, farms would be assigned randomly to the two groups. In practice, researchers are often faced with two self-selected groups (e.g. farms which have chosen to join a scheme which gives them access to extension advice and farms which do not join). Previous Irish studies of this type have shown that contact with the extension service and information seeking activities impact significantly on the rate of technical change and efficiency in Irish farms (Frawley, 1985; Leavy, 1991; Leavy et al, 1997). The difficulty in interpreting results of this kind lies in knowing how much the self-selection has biased the outcomes observed.

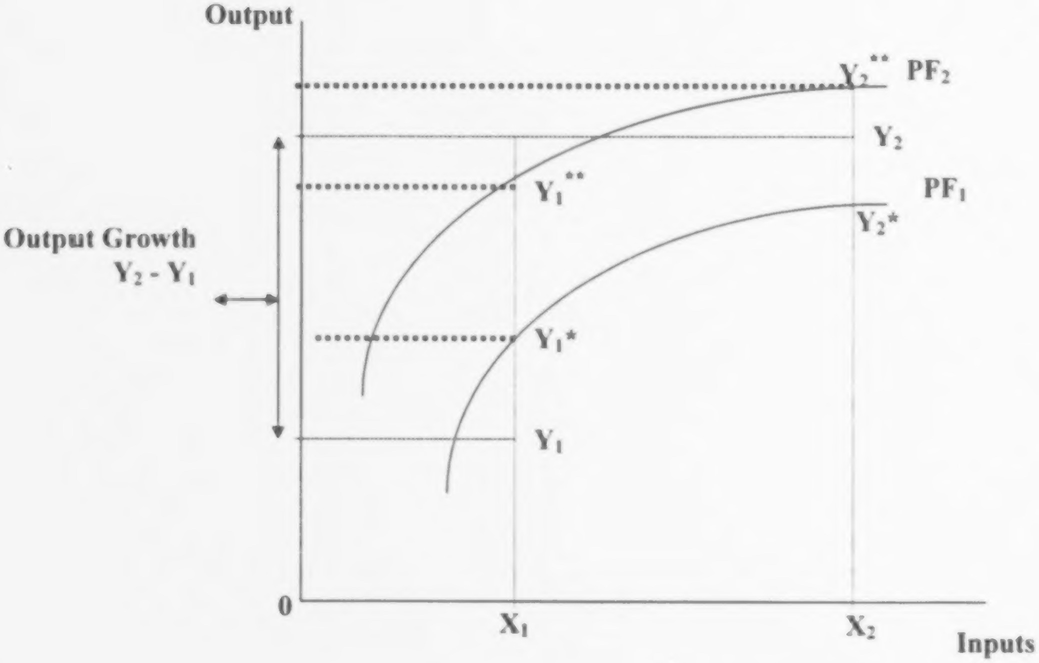
The second economic method is to try to account for differences in output across units (countries, states, regions, farms) in terms of differences in the use of conventional inputs (e.g. land, labour, capital) and non-conventional inputs (R&D expenditure, E&T expenditure) by fitting a production function to data on output and inputs. Such studies generally show high and positive rates of return to E&T expenditure, ranging from 20 to 100 per cent (see Birkhaeuser, et al., 1991 for a review). However, these studies have their own problems, including data issues such as measurement error and aggregation bias, and conceptual issues to do with the nature of the precise relationship between extension expenditure and the increase in output.

The practice of fitting production functions take no account of differences in technical efficiency between farms. With individual farm-level data, an alternative productivity decomposition approach can be used that entails two stages. In the first stage a total factor productivity index is computed for each farm, normally using a Divisia-type index. This is interpreted as an index of production efficiency. In the second stage the total factor productivity index is regressed on extension and other variables. More recent work in production economics seeks to define the 'best practice' frontier production function and to measure the distance individual farms are from this frontier. This distance is interpreted as a measure of the level of technical inefficiency of that farm. In this work three sources of agricultural output growth can be distinguished; in addition to increases in conventional inputs (which cause movements along the production function) and increases in non-conventional inputs (which cause a shift in the frontier production function), changes in output can also be due to changes in average technical efficiency (the average distance that individual farms or other units are from the frontier) In Figure 1, the growth in output for Farm A over the two periods is the distance Y_1-Y_2 and this growth has occurred due to changes in its three separate elements that is,

$$\textit{Output Growth} = \Delta\ \textit{inputs} + \Delta\ \textit{technical efficiency} + \textit{technical progress}$$

Output growth due to growth in the use of inputs is given by Y_2^{**}-Y_1^{**}. The change is technical efficiency is given by $[(Y_1^{*}-Y_1) + (Y_2^{**}-Y_2)]$ and technical progress is given by Y_1^{**}-Y_1^{*} or Y_2^{**}-Y_2^{*}.

Figure 1[2]
Production Frontier



This conceptualisation of agricultural growth suggests two channels of impact for E&T in terms of production agriculture. The first channel is to assist in the dissemination of new technologies to farmers as a way of increasing agricultural productivity, thus speeding up the adoption or use of technology and practices. The second channel is the role of E&T in improving human capital and the management skills of farmers, thus assisting individual farmers to improve their level of technical efficiency. In a static context, both channels would have the effect of moving farmers closer to the frontier. In a dynamic context, however, where the frontier itself is moving, the role of extension in diffusing innovation is underestimated by focusing solely on changes in technical efficiency.

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[2] This figure is adapted from Kalirajan et al. (1996)

This paper uses cross-section data on 152 Irish farms for a single year 1994 to measure each farm's level of technical efficiency (TE) relative to the best practice farms in the sample, and then seeks to identify whether contact with the extension service is a significant variable in explaining TE differences across farms. With just a single year of data, it is obviously not possible to measure shifts in the frontier production function over time and thus this aspect of the contribution of extension to agricultural growth is not captured in the methodology which follows. Nonetheless, the role of extension in improving human capital is a frequently cited objective of extension services (farmers' schooling and public extension are substitutes for efficiently processing information about new technology that affects productivity, Huffman and Evenson 1993) and separate attention to this aspect is justified. If a positive impact of extension on TE is found, then in principle the value of this productivity gain can be measured and compared to the investment in E&T. The resulting rate of return would then be a minimum rate of rate to E&T investment given that it ignores any (positive) impact on moving the frontier production function upwards.

Methodology

The key to measuring the TE of individual farms is identifying the relevant frontier function. Two broad approaches to this have been developed: parametric and non-parametric methods (see Coelli et al., 1998 for a introduction to this literature). In turn, parametric methods can be deterministic or stochastic. This paper models a stochastic frontier using econometric methods to obtain measures of technical efficiency. The stochastic approach works on the basis that there are some non farm specific factors, such as good weather, which may increase the output of the farm above the envelope of the frontier function.

The next decision is the functional form specification for the frontier function. The Cobb-Douglas specification is very parsimonious with respect to degrees of freedom but imposes strong assumptions on the nature of the farm technology. The translog production function is a more flexible functional form than the Cobb Douglas function and it also takes account of interactions between variables and allows for non-linearity in the parameters. For this reason the translog function has been used to represent farm technology although the hypothesis that a Cobb-Douglas form could represent farm technology can be later tested. The translog production frontier is given as

$$\ln Y_i = \beta_0 + \sum_{j=1}^{5} \beta_j \ln X_j + \tfrac{1}{2} \sum_{j=k}^{5} \varpi_{jk} \ln X_j \ln X_k + \sum_{j=1}^{5} \sum_{k=1}^{5} \varpi_{jk} \ln X_j X_k + V_i - U_i$$

where

ln is the natural logarithm

Y_i is the output of the ith farm (in Irish pounds)

X_1 is the land size of the farm in adjusted hectares

X_2 is the total number of labour units

X_3 is total number of livestock units

X_4 is the flow of capital services (in Irish pounds)

X_5 is other intermediate inputs (in Irish pounds)

V_i is a random error to account for factors not under the control of the farmer which are assumed to be independent and identically distributed with zero mean and unknown variance σ_v.

U_i is a non-negative random variable associated with technical inefficiency in production.

β_1 to β_5 and ϖ_1 to ϖ_{15} are the unknown parameters to be estimated.

The U_i are assumed to be independent of the V_i's such that the U_i is the non negative truncation of the normal distribution with mean μ_i, and variance σ^2. Even if the true values of the β parameters were known, the technical inefficiency effect U_i is unobservable as only the difference $E_i = V_i - U_i$ can be observed. However, adapting a result first recognised by Jondrow et al. (1982) that the best predictor for U_i is the conditional expectation of U_i, given the value of $V_i - U_i$, Battese and Coelli (1988) develop an expression for the predictor for U_i given E_i which is implemented in their computer program FRONTIER 4.1 (Coelli, 1996). This automates the maximum likelihood method for estimation of the parameters of stochastic frontier models and has been used to estimate the model in the present paper.

Once TE values for individual farms have been obtained, technical inefficiency (μ_i) for each farm is defined by the model

$$\mu_i = \delta_0 + \sum_{j=1}^{6} \delta_{ij} Z_{ij}$$

where the Z_i variables are a series of farm specific effects hypothesised to influence the level of TE, including measures of extension contact. Given the choice of a stochastic frontier model it is possible to take two routes in investigating the determinants of technical inefficiency variation among the farms in the sample. The two stage approach involves the estimation of the technical inefficiency effects from the stochastic frontier model and regressing these on the farm specific effects. This approach, though widely used, implies that the inefficiency effects which are assumed to be independently and identically distributed in the estimation of the stochastic frontier are a function of the farm specific effects in the second stage, thus violating the assumption that the inefficiency effects are identically distributed. Hence it was decided to use the single stage maximum likelihood function model developed by Battese and Coelli (1995) to estimate the model.

The data

The main source of data is the Irish National Farm Survey (NFS) which is undertaken annually by Teagasc as part of the EU wide farm accounts data network. Farmers are randomly selected from the farm population and participate voluntarily in the survey. The data set comprises of a sample of 152 farms in the year 1994 taken from the NFS.[3] The sample is not a random sample of farms in the survey but rather they form part of a panel of farms which have remained in the NFS from 1984 to 1994 and which also completed an additional survey relating to contact with the extension service.

Most Irish farms are multi product enterprises producing a combination of dairy, cattle, tillage, horse, sheep, pig or other output. The value of gross output (Y) is the total value of gross output of the individual farms in 1994. Five inputs are used in the study: land, labour, livestock, capital and variable inputs. Because the bulk of

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[3] Pig farms have been excluded from the analysis as they are considered to be atypical in the farming sector.

Irish farmland is farmed by owner-occupiers, a series on the rental value of farmland is not available. Instead, the land input is measured by the adjusted size of farm in acres. The adjustment here is the conversion of rough grazing to pasture equivalent and does not take account of differences in soil quality between farms. Such differences could therefore show up as differences in TE between farms. Labour input is measured as the number of labour units used, including family labour, casual and hired labour on the farm. Livestock input is measured as the total number of livestock units. Livestock units use feed demand equivalents based on the amount of feed each animal type consumes and these technical equivalents do not vary over time. Capital input is measured as the flow of services from from machinery, land improvements and buildings, The value of the capital stock on farms is reported under the headings of machinery, buildings and land improvements in the NFS. In each case the figure reported is closing stock, that is, the value of the asset at the start of the year, plus purchases less sales and net of depreciation. The service flow is calculated by adding together capital depreciation, the opportunity cost of capital and the cost of repairs and running expenses. Other intermediate inputs is calculated as the sum of intermediate inputs such as electricity, veterinary fees, and transport costs.

The following variables were used in explaining TE differences across farms:

Z_1 is a dummy variable where if the farmer participated in a training course = 1 and 0 otherwise

Z_2 is a dummy variable where a visit from the extension officer in the past year = 1 and 0 otherwise

Z_3 is a dummy variable where full time farms = 1 and 0 otherwise

Z_4 represents the size of the farm (measured in terms of gross margin rather than area)

Z_5 represents the growth in gross margin one each farm over the previous 10 year period

Z_6 is the age of the farmer

TE is measured on a scale from 0 to 1 in which higher values represent higher levels of technical *inefficiency*. The following coefficient signs are hypothesised. A visit from the advisory service is expected to have a negative co-efficient, that is, farms with extension contact are expected to be less technically inefficient. Similarly, farmers who attend a course are hypothesised to be less technically inefficient as a result. Economies of size may disadvantage smaller farms and thus the sign on the coefficient of the farm size variable (here measured by the size of the farm business rather than land area) is hypothesised to be negative.

Farmers who have experienced more rapid growth in gross margins in the recent past are assumed to operate with more modern equipment and to be more aware of best practices as a result and thus the sign on the growth variable is expected to be negative. The variable defining whether the farm is full-time or not is based on the estimated labour requirements of the farm enterprises found on the farm. The more appropriate variable to include would be whether the farmer engaged in off-farm employment or not but data on this was not available. Farms making poor use of their resources will tend to have low labour requirements and thus the expected sign on this variable will be negative. The average age of farmers in the sample (indeed, in Irish agriculture generally) is rather high at 50 years thus higher age is hypothesised to lead to less effort and less concern with optimising the use of resources under the farmer's control and thus a positive coefficient is hypothesised.

An obvious variable which might be expected to influence farm level efficiency is the educational status of the farm operator. Unfortunately, data was not available to us on this variable and thus it could not be explicitly included in the model. The summary statistics of the variables in the model are shown in Table 1.

Table 1. Summary Statistics of Variables in the Stochastic Production Function

Variable	Mean	Standard Deviation	Minimum	Maximum
Gross output (£)	45965.76	58651.19	1798.00	433217.00
Size of farm (ha)	54.37	60.79	9.79	645.08
Total number of labour units	1.62	0.81	0.46	0.67
Total number of livestock units	68.95	49.49	11.19	339.79
Capital (£)	14110.48	15515.80	489.16	114380.10
Other inputs (£)	19265.00	22232.27	1822.00	170823.80
Gross Margin	32766.79	35335.93	2268.85	243805.10
Growth rate in gross margin (%)	0.77	4.12	-16.80	11.65
Age of farm operator	50	11.51	25	74

Results

The maximum likelihood estimates of the technical inefficiency effects are given in Table 2. The null hypothesis that there are no technical inefficiency effects in the model was tested using the log likelihood function and strongly rejected.

Table 2. Results of the ML estimation

	Co-efficient	Standard error
Participated in a training course	0.08583	.06299
Had a visit from the advisory service	0.08085	.05987
Full time farm	-0.17890*	.07961
Growth in gross margin	-1.66770*	.85141
Gross margin	-0.00001*	.00007
Age of farm operator	-0.00107	.00288

* significant at a 5% significant level

Variables which appear significant in explaining differences in technical efficiency across farms include whether the farm business is sufficiently large to require at least 0.75 labour unit, recent growth in the size of the farm business and the average size of the farm business, all of which appear with the hypothesised sign. The coefficients on the two key extension coefficients are positively related to technical inefficiency, contrary to expectation, but the standard errors show that this result is not statistically significant. We conclude therefore that this sample of Irish farms does not show evidence that extension contact has had a positive impact on agricultural output.

There are various reasons which could explain this result. The most important is possible endogeneity of farmer-extension interactions. In other words, it may be that the extension service has deliberately sought out contact with less efficient farms.[4]

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[4] An analogous issue is that more frequent calls by the police to houses whose occupants are engaged in crime does not mean that police calls cause crime.

In further work, it would be useful to try to handle this problem of endogeneity econometrically. A second problem is that the measure of extension contact is a crude one. We cannot tell from the data the number of visits by the extension worker or the intensity of the contact the agent had with the farmer. A third issue is that some extension contacts may not be motivated by farm production considerations but by other factors, such as providing assistance on environmental management or claiming government supports. A fourth issue is the caveat mentioned in the introduction that extension may impact on agricultural output in ways which are not captured by changes in farm technical efficiency. A fifth issue is that the measure of technical efficiency reflects errors in measuring conventional inputs and, if these are correlated with the extension variables, this could bias the estimation process. Finally, it is possible to extend the analysis to a larger sample of farms covering more than a single year. This panel data approach may reveal effects not observable in data for a single year.

Bibliography

Birkhaeuser, D. and Feder, G. (1991) "The Economic Impact of Agricultural Extension: A Review " *Economic Development and Cultural Change*. Vol 39 p607-50.

Battese, B. Coelli T. (1988) "Prediction of Firm Level Technical Efficiencies with a Generalised Frontier Production Function and Panel Data"*. Journal of Econometrics* Vol 38 p387-399.

Battese, G. Coelli, T. (1995) "A Model for Technical Inefficiency Effects in a Stochastic Frontier Production Function for Panel Data". *Empirical Economics*. Vol 20. p325-332.

Coelli, T. (1996) "A Guide to FRONTIER Version4.1: A Computer Program for Frontier Production Function Estimation"*, CEPA Working Paper 96/07*, Department of Econometrics, University of New England, Armidale.

Coelli, T. Rao, D.S. Prasada, Battese, G. (1998). *An Introduction to Efficiency and Productivity Analysis*. Kluwer Academic Publishers. London.

Frawley, J. (1985) "Technical Developments and Change on Irish farms". *Proceedings of the 12th Annual Conference of Economic and Rural Welfare Centre*, Agricultural Institute now Teagasc.

Huffman, W. Evenson ((1993*) Science for Agriculture: A long term perspective*. Iowa State University Press. Ames.

Jondrow, J., Lovell, C.A.K., Materov, I.S, and Schmidt, p. (1982) "On the Estimation of Technical Inefficiency in the Stochastic Frontier Production Function Model", *Journal of Econometrics*. 19(/3) (August) p233-238.

Kalirajan, K.P., Obwona, M.B., and Zhao, S. (1996) "A decomposition of total factor productivity growth: The case of Chinese agriculture before and after reforms." *American Journal of Agricultural Economics.* vol. 78, p331-338.

Leavy, A. (1991) "An Assessment of the Farm Modernisation Scheme"*. Irish Journal of Agricultural and Rural Sociology*. 14 pp 12-28

Leavy, A., McDonagh P. & Commins, P. (1997) "An Economic Assessment of the Farm Improvement Scheme". *Rural Economy Research Series No. 4* Teagasc

Leavy, A., McDonagh P. & Commins, P. (1998) "Public Policy trends and Some Regional Impacts.". *Rural Economy Research Series* Teagasc

INFLUENCE OF THE POLISH/AMERICAN EXTENSION PROJECT ON POST-COMMUNIST TRANSITION OF THE POLISH EXTENSION SYSTEM

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Abstract

This study documented the post-communist transition of the Polish agricultural advisory system and the Polish/American Extension Project. It identified the strengths and weaknesses of the system and the Project from the perspective of Polish extension staff, administrators, governors, and advisory committees. The new extension model model was responsive to farmer-defined needs with relevant, science-based programs while it enhanced the capacity of farmers to deal with emerging challenges. The Polish/American Extension Project was a paradigm shift in international extension assistance away from the rigid, preplanned program transfer model to a collaborative, field-based evolutionary extension programming model.

INTRODUCTION AND THEORETICAL FRAMEWORK

Central and Eastern European nations in transition from communism during the 1990s faced unique circumstances. Sociopolitical transition involved adapting to multiple-party political systems and accommodating individual and group self-interests in the political process (Rychard). Kolarska-Bobińska observed "There are no cases with which the changes taking place in Eastern Europe can be compared. The changes are unique. . . their course and speed cannot be compared with what has taken place in other countries. There are no objective criteria which make it possible to assess whether the changes are rapid enough and whether the measures taken are reasonable and most effective given the situation. Introduction of a market economy to Eastern Europe is an experimental situation" (p. 61).

Transition to a market economy included macro- and microeconomic responses to market prices and reduced government control. Brzeziński noted "There are no examples or guidelines to direct the post communist transformation. There is no historical case for transformation of a communist-type totalitarian system becoming a viable democracy based upon a free market system. Nor has there been systematic conceptual or programmatic analysis of how such a political and socioeconomic transformation should be accomplished" (p. 2).

The extension system that emerged in Poland is an example of institutional transition. It developed during the period 1990 through 1995 with a direct programming and financial link between the Polish Ministry of Agriculture and Food Economy in Warsaw and provincial governors with input from public advisory councils in a user-oriented institutional framework. The Polish/American Extension Project, sponsored by U.S. Department of Agriculture and funded by U.S. Agency for International Development, was instrumental in the redirection and refocusing of the Polish agricultural extension system.

PURPOSE AND OBJECTIVES

This research describes characteristics of the Polish/American Extension Project (PAEP) during the transition of Polish agricultural extension (ODR) during the post-communist period 1990-1995, and documents influences of the PAEP. The research addresses three questions:

> How did the Polish Agricultural Advisory Service change to accommodate transition to a democratic, market based economy?
>
> How did the Polish/American Extension Project influence the post-communist Polish extension system to support private sector agriculture in a market-based economy?
>
> What were the Polish/American Extension Project's perceived strengths and weaknesses?

METHODS AND PROCEDURES

Case study descriptive analysis provided an organized picture of the phenomenon as it emerged (Isaac & Michael). A multiple-site design yielded a broad range of evidence, making the study robust and strengthening construct validity (Herriott & Firestone; Yin, 1989). Units of analysis were ODRs where U.S. PAEP staff were placed, including the organization, human and physical capital, procedures, and methods, and the processes and activities undertaken by the PAEP in cooperation with ODRs such as programs and projects.

Personal interview and mail survey responses from Polish extension staff, administrators, provincial governors, and advisory committee chairpersons were primary data. Records, reports and related materials were secondary data. Data were analyzed using inductive analysis (Patton) based on aggregation of pattern data and recurring regularities (Guba). Analysis included descriptions of cases, summarized and reported accomplishments, and respondent perspectives of accomplishments and impacts. Qualitative analysis was performed using ATLAS/ti software (Muhr), and quantitative analysis was supported with SPSS/PC+ software (Norušis) to test validity of selected responses from interview and survey populations using a procedure employed by Yin (1979). No significant differences were found.

RESULTS AND FINDINGS

Each respondent commented on changes observed between 1989 and 1995. There was near unanimity in the positive perspective of changes in institutional structure, organization, quality, effectiveness, and public support for the ODR system (Table 1). The need for economic decision making and dependence on the market was most often mentioned first, followed by the voluntary, non-coercive nature of the ODR system compared to its predecessor. The system was characterized as bottom up, dynamic, problem oriented, user oriented, and focused on information, markets and prices. Respondents regarded the change in locus of responsibility from the Ministry to the provincial governor as a change for the better. Decentralized control was perceived as responsive to regional needs, making it easier to serve farmers, especially small ones, without bias.

Table 1. Reported Strengths, Polish ODR System.

Institutional Strengths	
	Extremely rapid internal transformation
	Adjustment and adaptation to changing needs; flexibility
	Objective; cooperative and accommodating
	Fills a void
Administrative/Organizational Strengths	
	Budget link to Ministry through governor
	Independence (from the Ministry)
	Links self government, region, province, nation
	Philosophy of local communication and service
Human Capital Strengths	
	High quality staff
	Staff training, diversity and motivation
	Trains the trainers - flow of information
	Reputation and prestige
Sociopolitical Strengths	
	Social link to the village
	"Inside Outsider"
	Close and continuous contact results in respect, trust, confidence
	Involves the community; Social Advisory Committee
	Free service important to poor
	Respects self motivation of farmers
Programming Strengths	
	In stride with real needs; precisely addresses issues and problems
	Bottom-up program development
	Locally-based advisors; available to all
	Regional information provider and media link
	Cooperative/collaborative planning
	Solution based; helps people understand and react to reality
	Prepares people for the market economy
	Willing to transfer directly to clientele
	Applies new pedagogical methodology

Weaknesses were noted (Table 2). Most frequent was the reduction in staffing levels as clientele demand for service increased. Administrators generally felt that the reduction in force was beneficial as it removed unproductive or unadaptable advisors and specialists from service. Financial stress was mentioned in all provinces. Administrators were aware that their provincial governor's choices between funding for extension and other beneficial projects (roads, schools, sanitation, etc.) diverted some funds from ODR activities. Budget constraints limited ODR transportation, computer technology, and staff support.

Table 2. Reported Weaknesses, Polish ODR System.

- Institutional Weakness
  - Ill-defined legal structure
  - Vulnerable to additional staff reductions
  - Vulnerable to political intervention
  - ODRs institutional role in future of province is unknown
- Administrative/Organizational Weaknesses
  - Inadequate funding
  - Noncompetitive wages
  - Poor transportation infrastructure
  - Limited communication/media infrastructure
  - Lacks structure for introducing users' fees
  - Poorly developed linkages with research institutions
  - Ineffective advisory committees; status and function is ill-defined
- Human Capital Weaknesses
  - Human capital flight
  - Certain disciplines/expertise lacking
  - Insufficient training to integrate economic issues in all disciplines
- SocioPolitical Weaknesses
  - Marginalized clientele underutilize ODR services
  - Some distrust ODR as remnant of old system
  - Sometimes perceived as "outsiders"
  - Value of ODR village level work not visible to governor
  - Privatization efforts viewed as biased toward large enterprises
  - Link with local self government is ill-defined
- Programming Weaknesses
  - Loss of demonstration plots
  - Cannot service everybody
  - Some localities have no advisors
  - Advisors are too broad
  - Some targeted programs unsuccessful

A critical problem was providing competitive salaries to retain quality specialists and advisors. Half of the responding directors noted that private business easily outbid them. In response, ODR directors allowed their professional staffs to hold second jobs or consultancies.

The legal and institutional vagueness of the ODR system was another weakness. Most respondents believed that the structure of the ODR system would eventually be challenged by the emergence of more locally autonomous and political chambers of agriculture, a form of self government that dominated Polish extension institutional structure from the late 1920s until World War II. Chambers of agriculture were introduced to Poland from surrounding countries in the late 19th and early 20th century.

The Polish/American Extension Project (PAEP) was conceived in 1989, after U.S. Sec. of Agriculture Yeutter led a delegation to identify opportunities for cooperation to improve the state of Polish agriculture by increasing production efficiency and improving rural life quality (Yeutter, Janicki, & Balazs). The PAEP evolved around two factors defined by an assessment team in consultation with the Ministry, Parliament, and rural political groups (Jennings, 1990): (1) Developing extension organizational skills to plan and carry out client-oriented educational programs, and (2) Understanding economic principles and developing the skills for management, marketing, and agribusiness development in a market economy (Evans, Brewer, Moore, & Greaser). A third factor addressed the locus of U.S. assistance. Polish leaders were of the strong opinion that extension should serve the needs of agriculture in rural communities (Jennings, 1993).

To provide maximum benefit to Polish farmers and increase local political support for extension, the U.S. recommended that efforts be centered at the provincial level. Subsequent analysis documented the need for technical assistance in acquisition and use of agricultural inputs, strengthening research linkages to institutes and universities, extension staff development, extension operations and management, and computer support. The delegation identified a strong Polish human capital base well trained in biological and physical sciences but lacking knowledge of a contemporary market-based economy. It recommended technical assistance in economics and extension methodology through the placement of two-person teams at provincial sites for a period of six months to focus on economic agricultural practices in input utilization, develop research linkages including scientific and technical exchange, and develop extension materials and computer programs for economics, management and resource allocation.

All respondents identified multiple strengths and weaknesses of the PAEP (Table 3). All of the respondents were quick to credit the both the Polish and the U.S. leadership for vision and insight for the manner in which the collaborative project was developed and executed. The PAEP's influence on Polish extension organization, staff development and subsequent program quality, service and materials, and programming focus were all described in positive terms. Two concerns were identified: a bias toward large scale, commercial agriculture, and the introduction of U.S.-designed financial analysis software that was overly complex for Polish application and that may have impeded the development and use of indigenously prepared financial analysis software.

Table 3. Reported Strengths and Weaknesses of the Polish/American Extension Project.

Strengths	Weaknesses
Practicality	Bias toward large, capital intense farms
Computer emphasis	Language barrier; U.S. specialists should have had basic language training beforehand
Effective staff training	Lack of continuous follow-up
Visibility to clientele	No focus on ODR political development
Two-way communication	Lack of money
Business planning centers	Insufficient attention to rural leadership
Regional specialist training	Economics and market focus did not fully define all rural needs
Introduced "train the trainer" approach	Some targeted programs not successful
Philosophy of collaboration and sharing	Poor early orientation of U.S. specialists
Introduced research methods to ODR professionals	Not all of the U.S. specialists were well suited to their ODRs
Introduced social advisory committees	Ministry and ODR activity sometimes by-passed governor's office
Open to anyone approach - clientele contact in stride with needs	Aggressive introduction U.S. computer software like FINPAK slowed the development of Polish products
Personal approach to the job	Some U.S. people thought they were coming to a third world country
Personal presence at ODR, not the Ministry in Warsaw	Training (of ODR staff) sometimes preceded their understanding of need
Methodological improvement	Some U.S. personnel did not fully appreciate the needs of the small scale farmers farmers and processors
Provided equipment (computers, cars)	Initially slow to translate English materials into Polish language
Curriculum developed from the lowest level	
Adaptability	
Quality & motivation of ODR staff	
Minigrants	
Cross cultural learning	
Enhanced staff capacity	
U.S. team structure	
Preparation and quality of teams	
Increased goodwill	
Responsive to short & long-term needs	
Introduced the concept of excellence	

EDUCATIONAL IMPORTANCE

Both the transition of the Polish ODR system and the PAEP were evolutionary adaptations of contemporary extension science. Poland, as a post-communist social, political and economic pioneer, is a testing ground for the development of a transitional extension model bounded by massive social, political, and economic change. The Polish agricultural and rural environment is an incubator of future extension development for relatively developed countries with literate populations, with existing infrastructure, and that are not overwhelmed with chronic poverty, malnutrition and disease problems. The Polish experience may be valuable to developed countries facing economic or policy transitions.

CONCLUSIONS

The emerged Polish ODR model represented a radical departure from the directed, coercive technology transfer model that dominated its predecessors. The model successfully served the dual purpose of responding to the immediacy of clientele-defined needs with relevant, science-based programs while it enhanced the capacity of its clientele to deal with the emerging challenges of an uncertain future. While the ODR system proved to be remarkably versatile and adaptable over the five-year period of study, its institutional survivability may be challenged by the reemergence of provincial or local chambers of agriculture modeled after those that existed before WW II.

The Polish/American Extension Project was deemed highly successful, representing a paradigm shift in international extension assistance away from a rigid, preplanned program transfer model to a collaborative, field-based evolutionary extension programming model. Neither the Polish hosts nor their U.S. guests approached the PAEP as a measure to transfer the U.S. extension model.

Based on this study and the conclusions and implications gained from it, three recommendations for additional research are suggested:

1. The PAEP model is being replicated in Ukraine and Armenia, two very different ethnic and political cultures. The research questions posed in this study should be answered in both locations.
2. A theory of post-communist extension transition should be postulated and tested with empirical data from transitioning nations.
3. A longitudinal study of the Polish ODR system should be undertaken to document the next 10 years of legal and economic transition, with emphasis on the institutional evolution of extension as political and socioeconomic growth continues and relationships with the European Community emerge.

REFERENCES

Brzeziński, Z. (1992). Perspectives on the Political and Social Situation in Poland. Washington, DC: Annenberg Foundation.

Evans, D.E., T.A. Brewer, H.L. Moore, & G.L. Greaser. (1991). Development of an Agricultural Economics Training Program to Assist Polish Advisory Services. College of Agric. Sci. University Park, PA: Pennsylvania State Univ.

Guba, E.G. (1978). *Toward a Methodology of Naturalistic Inquiry in Educational Evaluation.*

CSE Monograph in Evaluation No. 8. Center for Study of Evaluation. Los Angeles, CA: UCLA.
Herriott, R.E., & W.A. Firestone. (1983). Multisite Qualitative Policy Research: Optimizing Description and Generalizability. Ed. Researcher. 12(2): 14-19.

Isaac, S., & W.B. Michael. (1981). *Handbook in Research and Evaluation.* 2nd Ed. San Diego, CA: EdITS

Jennings, V. M. (1990). Current Perspectives of Polish Agriculture. Washington, DC: USDA.

Jennings, V. M. (1993). Extension Impacts in Poland - Lessons Learned. Symposium on Science, Agriculture, and Environment in the Former Soviet Union. Boston, MA: Amer. Assn. for the Advancement of Sci.

Kolarska-Bobińska, L. (1994). *Aspirations, Values and Interests: Poland 1989-94.* Warsaw, Poland: IfiS.

Muhr, T. (1994). *ATLAS/ti User's Manual.* 2nd Ed. Berlin, Germany.

Norušis, M.J. (1988). *SPSS/PC+ Studentware*. Chicago, IL: SPSS.

Patton, M.Q. (1990). *Qualitative Evaluation and Research Methods*. Newbury Park, CA: Sage.

Potok, A. (1990, 17 Sep.). Change Proposals in the State Agricultural Extension System. Speech to Vice Voivods (Governors). Pozńan, Poland.

Rychard, A. (1993). *Reforms, Adaptation, and Breakthrough*. Warsaw, Poland: IfiS.

Sachs, J. (1994). *Understanding Shock Therapy*. Monograph. London, UK: Social Market Found.

Yeutter, C., C. Janicki, & A. Balazs. (1989, 16 Dec.). Statement of Intent Between United States Department of Agriculture and the Ministry of Agriculture, Forestry and Food Economy and Office of the Minister of Rural Life Quality, Polish People's Republic. Washington, DC: USDA.

Yin, R.K. (1989). *Case Study Research: Designs and Methods*. Applied Social Research Methods Series. Vol. 5. Newbury Park, CA: Sage.

Yin, R.K. (1979). *Changing Urban Bureaucracies: How New Practices Become Routinized.* Lexington, MA: Lexington Books.

Session D Program Impacts

March 22, 1:00 - 3:00 p. m.

Session Chair - Larry Miller

Location: Maraval Room

TITLE: Impacts of Distance Training on Turkish Farmers
AUTHOR: Ahmet Mufit Engiz, Susan Fritz, Arlen Etling, S. Kay Rockwell
University of Nebraska
DISCUSSANT: Pauline Dowlath

TITLE: Domestic Impacts and Implications of the Polish-American Extension Project
AUTHOR: Nick T. Place, Donald E. Evans
The Pennsylvania State University
DISCUSSANT: Pauline Dowlath

TITLE: Interplay at the Fringes of Chaos: A Case Study of NGO Ext., Education and Collaboration in the Dominican Republic
AUTHOR: Lourdes F. Brache (Cornell Univ.), Francisco Contreras, Silverio Agramonte and Frania Lami Sosa
Dominican Republic and Cornell Univ.
DISCUSSANT: Wade Miller

TITLE: Perspectives on Current and Future Priorities in Agricultural and Rural Development: A Quality Analysis with Implications to Environmental and Human Resource Development in Agricultural Education
AUTHOR: Yun Ho Shinn, Robert A. Martin/presented by Donn Russell
Seoul National University, Iowa State University
DISCUSSANT: Wade Miller

Impacts of Distance Training on Turkish Farmers

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Abstract

For both developed and developing countries, extension has historically meant education in agriculture, home economics and youth development for rural people. This practical orientation has been aimed at improving farm and home skills, applying science to real life (Arnon, 1989). To measure the changes in skills related to extension training, a program planning process must have well-designed evaluation procedures (Rennekamp, 1995). This study focused on evaluation of a Turkish extension education program. In Turkey, the Ministry of Agriculture and Rural Affairs (MARA) initiated a distance education project ("YAYCEP"- Extension Farmer Education Project) via television throughout the country in 1992. The stated outcomes for YAYCEP were to improve the agricultural knowledge and skills of farmers and, thus, broaden the agricultural base of Turkey. However, for five years, no one measured the impact of the project. Therefore, an evaluation was conducted during Fall, 1997, for the first series of YAYCEP in the Isparta region of Turkey. Participation in the training had a significant impact on certain livestock management practices. Labor and machinery intensity did not change significantly due to the training. Peer pressure from respondents influenced other farmers (not involved in the training) to restore and improve their facilities.

Introduction In Turkey, governmental agreement No. 441 signed by the Council of Ministers and the President of Turkey charged MARA with the mission of farmer education. MARA responded by developing and implementing a project named "YAYCEP." This distance education program was a collaborative venture of the Ministry of Finance, the Anadoulou University (an open university), and Turkish Radio and Television (TRT). The primary purpose of the program was to provide Turkish farmers with all the knowledge, information and skills needed in select areas of agriculture. The project was initiated on February 25, 1991, with a protocol signed by the above-mentioned institutions (MARA, 1991).

YAYCEP Project According to the project plan, farmers were to be trained in two main areas, animal husbandry and vegetable production, through five separate series of educational programs. In total, 209 educational programs were developed and presented via television. These programs addressed the following subjects: feeding and breeding of cattle, sheep, goats, and poultry; apiculture; sericulture; freshwater fishing; agricultural mechanization; agronomy; fruit production and viniculture; vegetable gardening; and landscape gardening. These programs were prepared by the staff of MARA and TRT. Each subject matter program included a lecture, related graphics, and relevant documentary films. To supplement the instruction, farmers were given books related to the subjects prior to the broadcast of the program. These books were published by the subject-matter experts of MARA. At the conclusion of the programs, participating farmers were examined by multiple-choice tests. Those who successfully completed the exams were given a certificate by MARA. They also were given some monetary rewards or agricultural equipment for their successful participation (Ministry of Agriculture and Rural Affairs, 1991).

The first series focused on feeding and breeding cattle, sheep, goats and poultry. It featured 45 TV programs about animal husbandry. This series lasted around six months with lessons organized as two-hour classes televised twice a week. TRT repeated the two-hour lectures weekly (Ministry of Agriculture and Rural Affairs, 1991). The subjects of some lessons related to feeding and breeding cattle: native and foreign race of cattle and breeder selection; artificial insemination, feeding and taking care of dairy cattle; unweaned calves and bulls; milking and milking techniques in dairy cattle; cattle barns; beef cattle breeding; important diseases in cattle; and preparing silage. Lessons related to breeding and feeding sheep and goats included: race and breeder selection in sheep production; milking sheep, important diseases in sheep and goats; feeding and taking care of sheep and breeder rams; and lambing, feeding and taking care of lambs, and sheepfolds.

A total of 860 farmers sat for the program examination on November 7, 1992. Slightly over one fourth (222) of the farmers successfully passed the examination and received certificates for their participation.

The Turkish government has funded many other educational extension programs for farmers throughout Turkey. The government, as well as the extension educators, need to determine if their programs improve the lives of the people who participate in these educational programs and impact the economy in rural Turkey. Therefore, an evaluation measured the long-term impact of YAYCEP which was implemented by MARA, and three other institutions, in the Isparta region, a province in southwestern Turkey, and made recommendations for future projects. Impacts were defined as changes in practices, end results, and productivity.

The objectives to measure the impacts were to:

1. determine the farmers' animal husbandry practices before and after

YAYCEP;
2. assess the end results of the project; and
3. compare the farmers' self-reported productivity in animal husbandry prior to and after the project.

Evaluation Design The target audience of this evaluation was the population of 222 farmers who were trained in the first YAYCEP series in the Isparta region of Turkey. Only those farmers who successfully completed the examination were sampled. In order to determine the sample group of the participants, 100 farmers' names were randomly selected from the list of 222 successful participants.

A questionnaire that contained 17 questions was translated into Turkish for administration by Turkish extension officials with farmers in the Isparta region of Turkey. The questionnaire consisted of several different types of questions. The first five questions contained a four-point Likert-type scale designed to measure the practice changes of the farmers. These questions were formatted as post-then-pretest measures (Rockwell & Kohn, 1989). To evaluate the changes related to the productive capacity and the use of input (end results), questions were also designed as post-then-pretests.

For this evaluation, a face-to-face survey was implemented. Therefore, written and oral instructions were given to the extension officials with particular attention given to not affecting the farmers' opinions while they were responding to the survey (Etling & Maloney, 1994). The results of the survey were entered into a data base through Microsoft © Excel for analysis using SPSS-PC. Percentages were calculated for all demographic variables and some comparison questions. In order to determine significance of farmers' practice changes, the χ^2 test McNemar was used. The results were tested at $\alpha \geq .05$. The McNemar test is used in pretest-posttest designs where the same sample of subjects is categorized before and after some intervening treatment (Hinkle, Wiersma & Jurs, 1988).

Results Table 1 compares practices of cattle breeders before and after YAYCEP. This table indicates that YAYCEP training was significantly effective (.05) in the care of young calves; improving the practices of monitoring feed needs of young animals; disinfecting barns; preparing compound feed; using corn silage; improving diagnoses of animals' diseases; and increasing the conception rate of cattle inseminated artificially; however, was not effective in decreasing the number of animals aborting.

YAYCEP training also improved some practices of farmers raising sheep or goats (see Table 2). Sheep or goat breeders diagnosed their animals' diseases more effectively; were more careful while feeding their young animals; disinfected their barns more regularly; and their sheep and goats aborted less after YAYCEP training. On the other hand, the breeders' practices did not change in preparing compound feed and selecting rams for their herd.

Eighty percent of the farmers participating in YAYCEP (and passing exams) reported after training that their animals were sick less. Sixty percent of the farmers reported a positive change in productive capacity as a result of their participation in YAYCEP.

An overwhelming majority (90%) of the farmers stated that their production increased after YAYCEP training. However, 58% of the participants reported that increases were "very little" or "hardly none".

YAYCEP training stimulated farmers to build or restore their barns. Coop and barn construction is a positive sign. It indicates that farmers are interested in long-term investment in animal husbandry. Technical staff who work in the MARA office in Isparta have also stated that this situation positively affected (peer pressure) other farmers who did not participate in YAYCEP to likewise build or restore their barns. This is a fundamental, indirect benefit of YAYCEP in the region.

Recommendations The recommendations below were made for future adult farmer programs.

1. When the available document (Ministry of Agriculture and Rural Affairs, 1991) related to YAYCEP was examined, it was evident that no analysis of internal and external factors, and the client system in the context of planning was conducted by the MARA administrators and staff. All factors and clientele should be analyzed for future programs maximizing the involvement of stakeholders.

2. Despite the fact that one of the most important components of a program planning process is the needs assessment, the YAYCEP program did not have a needs assessment. Therefore, a needs assessment should be implemented with the involvement of a sufficient number of farmers interested in future training programs.

3. The objectives of YAYCEP were too general and unclear. Clear and specific objectives are essential elements of a good program (Knowles, 1980; Boyle, 1981; Sork, 1991). A set of objectives should have been determined for each series of YAYCEP rather than a set for the entire program. The objectives of future programs should be more specific and detailed than YAYCEP's, connecting the question of "what will be learned for what" to program objectives (Boyle, 1981; Blackburn & Flaherty, 1994; Caffarella, 1994).

4. The method of examination should be researched with particular attention paid to new approaches to measure the increases in knowledge of participants. More effective means of examination may increase the likelihood of participants successfully passing. The past rate of 222 of 860 farmers passing is problematic. Either the kind of assessment was ineffective or the program was ineffective.

5. For future programs similar to YAYCEP, Bennet and Rockwell's (1995) TOP model should be employed. The TOP model provides planners with an integrated approach to planning and evaluation. However, the TOP model assumes the objectives (outcomes) of a program have been clearly determined. With these clear objectives or outcomes, TOP can work effectively and efficiently, and likely enhance the success rate of the participants.

6. Further study of all participants in the YAYCEP animal husbandry series would help to answer questions related to practices, end results, and productivity of **all** learners. This study could also determine why less than 25% of participants passed the examination.

This is a landmark study for Turkish Extension which is administered through the MARA. It marks the first formal evaluation of extension training offered via television in Turkey. It is one of the only studies done through MARA that addresses the results of extension training. Conclusions regarding the successes of the training and its impacts have been documented. These successes will help confirm the contribution of extension education to agricultural development and to national economic goals.

Lessons learned about organizing and delivering the training will be helpful for future extension programs. Careful planning based on a formal needs assessment involving the learners will be important to formulating precise objectives for future training programs. The author will be involved in implementing the recommendations from this study.

References

Arnon, I. (1989). Agricultural research and technology transfer. New York: Elsevier Science Publishers.

Bennett, C.F. & Rockwell, K. (1995). Targeting outcomes of programs (TOP): an integrated approach to planning and evaluation. Unpublished Manuscript, University of Nebraska at Lincoln.

Blackburn, D.J. (Ed.) & Flaherty, J. (1994). Extension handbook: Processes and practices. Toronto: Thompson Educational Publishing, Inc.

Boyle, P.G. (1981). Planning better programs. New York: McGraw Hill.

Caffarella, R.S. (1994). Planning programs for adult learners: A practical guide for educators, trainers, and staff developers. San Francisco: Jossey-Bass Publishers.

Etling, A. & Maloney, T. (1994). Needs assessment: For extension agents and other nonformal educators. Pennsylvania State University: Cooperative Extension Service.

Hinkle, D.E., Wiersma, W. & Jurs, S.G. (1988). Applied statistics for the behavioral sciences. Boston: Houghton Mifflin Company.

Knowles, M.S. (1980). The modern practice of adult education: From pedagogy to andragogy. (rev. ed.). Englewood Cliffs, N.J.: Prentice-Hall.

Ministry of Agriculture and Rural Affairs (1991). YAYCEP. (Number TD.03.004/0087-2714) (M. Engiz, Trans.). Ankara, Turkey: Turkish Government.

Rennekamp, R. A. (1995). A focus on impacts: A guide for program planners. University of Kentucky: Cooperative Extension Service.

Rockwell, S.K. & Kohn, H. (1989). Post-then-pre evaluation. Journal of Extension, Summer, 19-21.

Sork, T. J. (Ed.). (1991). Mistakes made and lessons learned: Overcoming obstacles to successful program planning. New directions for adult and continuing education, (no.49). San Francisco: Jossey-Bass Publishers.

Table 1. Comparison of Cattle Breeders' Practice Changes Before and After YAYCEP

	Frequencies BeforeYAYCEP				Frequencies After YAYCEP			
Variables n=92	1	2	3	4	1	2	3	4
Was/Is there any separate section in your barn for young calves?	16 (17%)*	75 (82%)	1 (1%)	0 (0%)	28 (30%)*	64 (70%)	0 (0%)	0 (0%)
Did/Do you weigh your cattle herd's milk at least once a week?	44(48%)*	46 (50%)	2 (2%)	0 (0%)	64 (70%)*	26 (28%)	1 (1%)	1 (1%)
Did/do you monitor the feeding needs of young calves by weighing them?	13(14%)*	75 (82%)	4 (4%)	0 (0%)	32 (35%)*	59 (64%)	1 (1%)	0 (0%)
In artificial insemination, was/is the conception rate of your cattle more than 80% ?	60 (66%)*	24 (26%)	4 (4%)	4 (4%)	72 (79%)*	14 (15%)	2 (2%)	4 (4%)
Did/Do you use corn silage to feed your cattle?	1 (1%)*	91 (99%)	0 (0%)	0 (0%)	22 (24%)*	70 (76%)	0 (0%)	0 (0%)
When your animals became/become sick, were/are a veterinarian's diagnosis and yours the same or very similar?	40(43%)*	43 (47%)	9 (10%)	0 (0%)	82 (89%)*	7 (8%)	3 (3%)	0 (0%)
Did/Do the cattle often (more than 20%) abort?	10 (11%)	80 (87%)	2 (2%)	0 (0%)	6 (7%)	86 (93%)	0 (0%)	0 (0%)

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Did/do you prepare compound (complete) feed mixing some grains such as corn, barley etc. other than the feed that you buy from market?	55(60%)*	34 (37%)	3 (3%)	0 (0%)	76 (83%)*	16 (17%)	0 (0%)	0 (0%)
When preparing compound feed in your farm, did/do you add needed substances considering your animals' vitamin and mineral needs?	44(48%)*	46 (50%)	2 (2%)	0 (0%)	62 (67%)*	30 (33%)	0 (0%)	0 (0%)
Did/Do you disinfect and apply lime to your barn monthly?	28 (30%)*	60 (66%)	4 (4%)	0 (0%)	76 (83%)*	16 (17%)	0 (0%)	0 (0%)

Note. Likert-type scale, 1 = Yes, 2 = No, 3 = Do not know, 4 = No response. *Designates significance at .05 level. McNemar comparisons made for responses of "Yes" or "No" before and after YAYCEP training.

Table 2. Comparison of Sheep or Goat Breeders' Practice Changes Before and After YAYCEP

Variables	Frequencies Before YAYCEP				Frequencies After YAYCEP			
n = 92	1	2	3	4	1	2	3	4
When your animals became/become sick, were/are a veterinarian's diagnosis and yours the same or very similar?	9(39%)*	11(48%)	3 (13%)	0 (0%)	19(82%)*	4 (18%)	0 (0%)	0 (0%)
Did/do your sheep or goats often abort?	8(35%)*	13(57%)	2 (8%)	0 (0%)	1 (4%)*	22 (96%)	0 (0%)	0 (0%)

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Did/do you prepare compound (complete) feed mixing some grains such as corn, barley etc. other than the feed that you buy from market?	13(57%)	9 (39%)	0 (0%)	1 (4%)	18 (78%)	4 (18%)	0 (0%)	0 (0%)
When preparing dry feed in your farm, did/do you add needed substances by considering your animals' vitamin and mineral needs?	7 (31%)	15(65%)	1 (4%)	0 (0%)	11 (48%)	12 (52%)	0 (0%)	0 (0%)
Did/do you disinfect and apply lime to your barn monthly?	10(44%)*	12(52%)	1 (4%)	0 (0%)	17(74%)*	6 (26%)	0 (0%)	0 (0%)
Did/do you select rams for your herd?	18(78%)	5 (22%)	0 (0%)	0 (0%)	20 (87%)	3 (13%)	0 (0%)	0 (0%)
Did/do you prepare feed rations separately for your lambs, sheep, yearling sheep or goats and their kids?	7(31%)*	16(69%)	0 (0%)	0 (0%)	13 (56%)	10 (43%)	0 (0%)	0 (0%)

Note. Likert-type scale, 1 = Yes, 2 = No, 3 = Do not know, 4 = No response. *Designates significance at .05 level. McNemar comparisons made for responses of "Yes" or "No" before and after YAYCEP training.

DOMESTIC IMPACTS AND IMPLICATIONS OF THE POLISH-AMERICAN EXTENSION PROJECT

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ABSTRACT

A descriptive study was conducted to determine the domestic implications of the Polish-American Extension Project within the United States. The study uncovered factors leading to improvement of similar types of international technical assistance programs. Results were documented and benefits were displayed for the American participants as well as secondary spin-off effects on near-associates such as colleagues, clientele, family members, businesses, organizations, universities, counties and states.

INTRODUCTION AND THEORETICAL FRAMEWORK

Several strategies have been utilized to support the progress of agriculture in developing countries. One such strategy, the United States Department of Agriculture (USDA) developed an agricultural technical assistance program to help address the needs of Poland in relation to agricultural production, management, Extension methodologies, and a new free market economy. In 1990, the Polish-American Extension Project (PAEP) was initiated for American Extension specialists and agents to work jointly with Polish Extension counterparts to develop educational programs. Seventy Americans served assignments of six months or more at provincial-level agricultural advisory centers (Osrodek Doradztwa Rolniczego or ODRs) in Poland (Bahn, 1997). While the immediate success and impact within Poland's Extension system and agricultural sector have been well documented, there was a lack of any empirical evidence of domestic impact or implications within the United States from this overseas technical assistance program.

Moreover, there still remains an impression among many Americans that overseas technical assistance programs are merely a drain on United States resources, and the tangible benefits to the United States are limited, if any. In an era of shrinking budgets and an increasing need to show justification and accountability, the value of this study was both timely and important.

PURPOSE AND METHODS

The purpose of this study was to document the domestic implications, both positive and negative, as a result of the Polish-American Extension Project (PAEP). Specifically, the study was designed to assess and document the extended involvement of PAEP participants, colleagues, community members, groups and constituents in continuing interactions with Poland, especially any social-cultural linkages or implications and endeavors that have benefited PAEP participants and, in turn, a larger cross-section of Americans.

The Polish-American Extension Project was selected as the study focus for several reasons. This project was successful itself and serves as an exemplary overseas technical assistance program. Bahn (1997) found overwhelming success of this project in meeting its objectives in his follow-up evaluative study of program impact. The provincial level project created a foundation for a progressive Extension system by changing the mentality of Extension workers and clientele. The project stressed agricultural economic and market education and led to positive growth in clientele through changes generated within the Polish Extension system.

The general objectives of the study were to assess the domestic implications resulting from an international technical assistance project, namely the Polish-American Extension Project (PAEP). The results provided information to organizations and individuals seeking to improve international technical assistance programs and projects through strong domestic involvement and interaction.

The primary design was a descriptive case study to systematically describe the domestic implications of the Polish-American Extension Project on participants and near-associates. A mixed-method design was utilized in which a quantitative methodology (a mail survey) was used in conjunction with qualitative methodologies (semi-structured on-site interviews). Data analysis proceeded sequentially: the survey data were analyzed prior to beginning the interviews. The preliminary analysis of the survey data provided a foundational basis for the subsequent development of interview questions and analysis of the resulting qualitative data. Typology development was utilized to integrate the quantitative results with the qualitative results (Caracelli & Greene, 1993).

Two primary research steps were conducted in order to garner the descriptive data. The first consisted of a census survey design among PAEP participants (N=70, 95.7% response rate) for domestic impact assessment as well as indication of linkages that resulted. The overall purpose of the questionnaire was to document the effects of this overseas technical cooperation experience on American team members. Sections of data from the questionnaire were utilized to help explain subsequent integration of an international dimension into Extension units and educational programming. Data were entered into a preset SPSS quantitative analysis program. Basic statistical analysis tests were conducted.

Secondly, on-site interviews (N=23) were conducted in two randomly selected states to obtain in-depth data from participants and near-associates consisting of coworkers, colleagues, administrators, and family members citizens. Qualitative data from the questionnaire were entered into a word document and categorized for subsequent content and critical incident analysis. The qualitative data were also used to clarify and/or substantiate findings revealed via the participant questionnaire. Priority was given to conduct actual face-to-face interviews with those selected, but telephone interviews were utilized where and when necessary. Preference was given to individuals who had knowledge or experience prior, during and subsequent to an individual's PAEP participation in order to obtain the most comprehensive and robust data (Patton, 1990; Denzin & Lincoln, 1994). A sampling frame (Denzin & Lincoln, 1994) was also established around the factors of male/female, single/multi-term assignment, program focus, and county/state staff.

An interview guide was developed and utilized to gather in-depth qualitative data from participants and near-associates based upon data derived from the preliminary questionnaire instrument. The semi-structured interview guide served to provide structure and a protocol to assure consistency of data between and among sites and interviewees. Interview triangulation was conducted with data from other respondents and through observation to assure the highest rigor and validity of the qualitative data (Lincoln & Guba, 1985; Patton, 1990).

FINDINGS AND RESULTS

Effects Upon Participants

The PAEP was an extremely satisfying experience for the participants. Over 89 percent rated the experience highly satisfied to very satisfied depicting strong interest, commitment, and support for their work. Of a possible ten-point satisfaction scale, respondents rated the assignment 9.29 (very positive). Most participants (48%) rated the experience 10 while another 42 percent rated it 9 (Table 1).

Participants derived an extensive impact from the experience (8.53 of a ten-point scale). They were able to gain an increased global awareness, appreciation and understanding; improved self-esteem, motivation and reinvigoration; and they gained professionally in the areas of grassroots input, needs analysis, program development and symbiotic relationships with others. Through this international experience participants felt that others had also received impact. Of a ten-point scale participants' immediate and extended families had received highly moderate impact (6.79), and colleagues and clientele had received moderate impact (5.20) (Table 1).

This effort by the participants to extend the effect of the project domestically was an important step to improve the public's attitudes and perceptions of international involvement (Holsti, 1996). People were able to connect with another country through someone that they knew. Extension can play a major educational role to progress the public's awareness and understanding through similar types of extended involvement and interaction (Acker & Scanes, 1998; Moser, 1998; Johnsrud & Black, 1989; Smuckler et al., 1988).

Table 1. Perception of Participant Satisfaction and Overall Impact of the Polish-American Extension Project Assignment.

Characteristic	Mean*	Std. Dev.
Participant satisfaction with their assignment	9.29	1.02
Participant personal and professional development	8.53	1.38
Immediate and extended family	6.79	2.78
Colleagues and clientele	5.20	2.93

* Mean was calculated from an eleven-point scale that ranged from 0 = No impact; 5 = Moderate impact; to 10 = Extensive impact.

Professional impact was clearly evident among most of the participants. The project brought about a positive degree of influence in relation to Extension career opportunities, their

Extension position, clientele and community relationships, and professional relationships. Some participants (16 to 32 percent) perceived no impact in these areas while very few (2 to 9 percent) felt negative impact. Those denoting negative impact felt that the assignment hindered their professional growth, promotion, or tenure. The experience served to increase the status of most participants within the Extension organization, as well as, with their communities and Extension clientele. They were able to convey new international knowledge, awareness and understanding that was appreciated by others (Table 2).

Table 2. Percentage Distribution of Self-Perceived Influential Factors as a Result of Participation in the Polish-American Extension Project.

	Degree of Influence		
Influencing Factor	Positive	None	Negative
Extension career opportunities	62.1	31.8	6.1
Extension position or relationships	72.3	18.5	9.2
Clientele relationships	79.1	16.4	4.5
Community relationships	79.7	18.8	1.6
Professional organization relationships	74.7	20.9	4.5
Participants' family	85.1	7.5	7.5
Participants' health	37.9	45.5	16.6
Participants' economic well-being	64.2	25.4	10.5

Communication, Interaction and Involvement during the International Assignment

A significant amount of communication and interaction occurred during the PAEP, and many people realized benefits from it. People became more involved with what the participant was doing which resulted in increased international interest, awareness and understanding. These efforts served to integrate international components into Extension programming. Several PAEP participants successfully utilized communication such as radio programs, newspaper articles and newsletter stories during their assignment, and this provided connection to clientele and stakeholders. People were able to maintain a sense of contact with the individual that minimized disregard for the person or the position. These steps also enhanced international awareness and understanding.

Inclusion of United States citizens became a positive attribute of the PAEP. This involvement occurred indirectly as a result of interactions and linkages that evolved from the initial project. This involvement included exchanges, study tours, hosting international visitors, development of an international 4-H foundation, business endeavors, and trade. A significant number of people resultantly received an effect from this international endeavor. Many of these would have not occurred without the PAEP and the large amount of involvement that subsequently ensued (Table 3).

Table 3. Interaction and Communication between the Local Extension Unit and the Polish-American Extension Project Participant while on Assignment.

Source	Mean*	Std. Dev.
Took slides and notes for explaining the assignment to U.S.A. clientele	4.36	0.92
Ability to receive resources when requested	3.49	1.11
Participant received communications or responses	3.15	1.20
Participant initiation of communication or requests	3.06	1.00
Involvement of U.S.A. Extension colleagues during the assignment	2.92	1.15
Prepared newsletters or news-releases for U.S.A. use while on assignment	2.62	1.38
Extension organization initiated communication	2.20	1.09

*Mean for interaction and communication computed from a five-point scale of 1 = Not at all; 2 = A little; 3 = Somewhat; 4 = Quite a bit; and 5 = Very much.

Community and Organizational Awareness, Communication and Visibility

Most participants took extensive steps to integrate the international experience into subsequent extension programming. Resultantly, others were able to gain an increased knowledge, awareness, understanding and involvement in this international effort. Positive findings were noted among most interviewees regarding secondary effects to near-associates, the Extension organization and to clientele from the international experience.

The PAEP was unique in that communication and interaction during the assignment was encouraged. This differed from other types of international technical assistance projects in which there was minimal connection during or after the assignment. As a result, more people were aware and involved with this international effort.

Participants utilized several means upon their U.S. return to communicate the experience to others and for its integration into subsequent Extension programs. A very large number of presentations were made to clientele and community groups as over 46 percent of participants stated extensive involvement (16 or more instances). Over 31 percent shared a significant amount of resources or materials about international programs, and 27 percent extensively counseled others based upon their experiences (Table 4). Mean categorical values from highest to lowest levels of integration into participants' subsequent extension program are noted in Table 4.

Table 4. Output, Visibility and Integration of the Polish-American Extension Project into Participants' Subsequent Extension Program.

Characteristic	Level of Integration*						
	None	A few	Some	Moderate	Extensive	Mean	S.D.
Presentations to clientele and community groups	3.0	14.9	25.4	10.4	46.3	3.82	1.25
Sharing materials or resources about international programs	6.0	28.4	19.4	14.9	31.3	3.37	1.35
Counseling individuals	6.0	26.9	26.9	13.4	26.9	3.28	1.29
Creating linkages with Poland	4.5	37.3	26.9	11.9	19.4	3.05	1.21
Level of interactions with people from Poland	4.5	45.5	16.7	15.2	18.2	2.97	1.24
Media communications disseminated	18.2	33.3	19.7	7.6	21.2	2.80	1.41
Educational programs designed or modified	16.7	40.9	21.2	10.6	10.6	2.58	1.20
Print materials developed	20.0	41.5	18.5	13.8	6.2	2.45	1.15
Supporting community groups with international interests	22.7	54.5	12.1	3.0	7.6	2.18	1.07

* Levels of interaction and value labels were defined as: (1) None; (2) A Few = 1-5; (3) Some = 6-10; (4) Moderate = 11-15; and (5) Extensive = 16 or more interactions or instances.

CONCLUSIONS AND RECOMMENDATIONS

The prominence of global issues causes greater need for more people to fully comprehend the complexities of an intertwined worldwide society. The U.S. is becoming more dependent upon international markets and trade to further its economic success. Exports generate over half of the gross national product for U.S. agriculture, and developing countries account for about half of this amount. As these developing countries improve their economies, they can afford more and better products, including food. This market development is important for the agricultural sector as well the entire U.S. economy.

Extension can play a key role in this regard. Extension education needs to take a proactive approach to instill international awareness, knowledge and understanding among its clientele. People need to comprehend how the U.S. is interconnected to other countries through trade, economics and politics. Extension can play a key visionary leadership capacity in helping the populace understand these issues.

In the U.S., Extension education or Outreach is attaining greater importance. It is through Extension that Land-Grant Universities stay in touch with the public and address nonformal educational needs while improving the public's economic well being and quality of life. An integral part of this public education endeavor needs to consist of international issues. It is vital for Americans and American agriculture to have a global understanding and adjust their business accordingly based upon what is known. U.S. producers would benefit from stronger broader-based knowledge of international markets and competitors. Steps should be taken to integrate relevant international perspectives into all Extension programming to enhance global knowledge and skills of the U.S. agricultural producers and the general public.

This research has documented the importance of Extension efforts to enhance global knowledge and understanding. The public attained a better global appreciation for Extension's international involvement through those involved in the PAEP. People were able to learn more about another country, its people, and its agriculture. Because of this, more people have some type of connection to another country. They better understand different people and contrasting ways of life. Extension efforts need to be designed to enable a provision of international knowledge and understanding in home communities and businesses of opportunities and constraints for marketing and exports.

Participants in the PAEP clearly obtained a personal and professional benefit from the international experience. They returned to the U.S. with improved skills, new knowledge, renewed enthusiasm, and commitment to Extension education. Clientele were able to receive a greater amount of relevant international programming. Extension organizations benefited from reinvigorated faculty and staff.

The Polish-American Extension Project provided numerous opportunities for involvement outside the actual project. Because of the resultant extended involvement and domestic benefit, the PAEP cooperative assistance model rather than the traditional technical assistance model is recommended. People became involved through interactions, exchanges, study tours, and linkages. As a result, people obtained an international experience who may not have otherwise.

Many more people were able to gain international awareness, knowledge and understanding through this involvement. Communication and interaction during and subsequent to the international assignment facilitated this positive gain. These efforts need to be established and encouraged to facilitate the best possible domestic benefit from international endeavors.

International programs need to facilitate the involvement of families to strengthen and extend educational possibilities in the recipient country. Families served in a strong supportive way during the PAEP international assignment for participating faculty and staff. Moreover, family members returned to the U.S. with greatly increased knowledge and understanding that was extended to others. This augmented and strengthened the domestic level of awareness and understanding that was actually attained.

In the future, more effort should be placed on the establishment of mutually beneficial collaborative global partnerships. This occurred to some extent with the PAEP, but could have been intensified. Several small and mid-sized businesses were able to capitalize on the linkages developed because of the PAEP. This study showed that there is support among the general public to endorse programs that result in linkages among educational providers and businesses. There are numerous contextual benefits that can be derived through cooperation and collaboration among international education providers, businesses and individuals. Cooperative international efforts would help foster trade, new technologies and new information between the U.S. and other countries through a spirit of camaraderie and partnership.

CITED REFERENCES

Acker, D. G., & Scanes, C. G. (1998). A case for globalizing U.S. colleges of agriculture. Journal of International Agricultural and Extension Education 5(1): 59-62.

Bahn, H. M., Evans, D. E., & Crago, N. E. (1998). "Influences of Polish Extension on post-communist transition." Selected paper. AIAEE Annual Research Meeting. Tucson, AZ. April 16-19.

Caracelli, V. J. & Greene, J. (1993). Data analysis strategies for mixed-method evaluation designs. Educational, Evaluation and Policy Analysis 15(2): 195-207.

Denzin, N. K., & Lincoln, Y. S. (1994). Variety in qualitative inquiry: Theoretical orientations. Handbook of Qualitative Research. Ed. Norman K. Denzin and Yvonna S. Lincoln. Newbury Park, CA: Sage Pub., Inc.

Holsti, O. R. (1996). Public Opinion and American Foreign Policy. Ann Arbor, MI. Univ. of Mich. Press.

Miles, M. B. & Huberman A. M. (1984) Qualitative Data Analysis. Newbury Park, CA: Sage Pub., Inc.

Moser, B. D., ed. (1998). Globalizing agricultural science and education programs for America. Washington, DC: NASULGC-Int Agri. Section.

Patton, M. Q. (1990). Qualitative Evaluation and Research Methods --2nd ed. Newbury Park, CA: Sage.

Purcell, D. L. & Anderson, J. R. (1997). Agricultural Extension and Research: Achievements and Problems in National Systems. Washington, DC: The World Bank.

Richardson, J. G., & Woods, F. (1991). Expanding our horizons internationally. Journal of Extension 29(3) 23.

Rivera, W. M. (1991). Concepts and frameworks in international agricultural extension. Journal of Extension Systems 7(2), 74-86.

Schumacher, A. (1998). "America's role in world food security in the 21st century." M. E. John Memorial Lecture. Penn State University, Univ. Park, PA. 13 Apr.

Seevers, B., Graham, D., Gamon, J., & Conklin, N. (1997). Education through Cooperative Extension. Albany, NY: Delmar Pub.

Yin, R. K. (1994). Case study research: Design and methods. Thousand Oaks, CA: Sage Pub., Inc.

Interplay at the Fringes of Chaos: A Case Study of NGO Extension, Education and Collaboration in the Dominican Republic

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Abstract:

Extensionists from the *Centro Zonal de Pastoral Social*, a Catholic NGO in the Dominican Republic, are finding new ways of thinking about extension to reach more people. Traditionally, extension in the Dominican Republic has followed two top-down models. In the diffusion model, farmers are passive recipients of a prescribed program identified by scientists and supported by governmental organizations. In the innovation model of Farmer System Research (FSR) an interdisciplinary team of specialists do on-farm experimentation to encourage adoption of a particular technology. Extensionists in CEZOPAS are taking a farmer-centered approach while at the same time maintaining a dynamic partnership with research institutions and with governmental agencies.

Unlike most extensionists in the Dominican Republic who live in urban centers and commute to the areas they serve, CEZOPAS' extensionists live in the region they serve. This policy resulted from a conscious decision by CEZOPAS regarding the importance of proximity to clients. Their extensionists are paid by governmental organizations such the Department of Agriculture, Forestry, and the land reform organization, *Instituto Agrario Dominicano* (IAD), but work directly for CEZOPAS. They dedicate approximately ten percent of their time to writing and submitting reports to their particular organizations and the remaining 90 percent to visiting farmers.

Purpose:

This paper has a dual purpose. First, to document: (a) collaboration among extensionists from CEZOPAS, farmers from the Los Haitises National Park (LHNP) region, Cornell's Center for International Food, Agriculture and Development (CIIFAD), and governmental organizations; (b) how the teaching-learning and hands-on approach used in training and visits support farmer-centered research in communities of the LHNP; (c) how community members diffuse knowledge; and (d) how a farmer-to-farmer extension strategy alleviates the limited human and financial resources available to CEZOPAS by decentralizing extension services. Secondly, our intent is to highlight cooperation among farmers and non-governmental, governmental, and private organizations with the hope that the synergistic partnership described here can be useful to other organizations within and beyond the Dominican Republic.

Introduction:

The LHNP is located on the north central coast of the Dominican Republic. It comprises less than ten percent of the country's land area and is one of the Dominican Republic's largest national park. The topography is comprised of karstic hills, or *mogotes* , of limestone rock interspersed with deep valleys, or *fondos* , caves and alluvial terraces (Zanoni et al., 1990). The park has a large underground aquifer and one of the country's largest mangrove forests and humid forests (Laba, 1997). The LHNP was created in 1976 through Law 67 and has undergone several boundary changes (Geisler et al., 1997). In some instances, the government has forcibly resettled community members into government designated areas, leaving many residents uprooted in unfamiliar places and farming on smaller plots (Geisler, 1996).

From 1980 to 1997 Cornell researchers conducted sociological, demographic, agronomic, socio-economic, and biological research in the LHNP region. Research in the LHNP intensified during 1995-1997 as faculty from Cornell and local universities participated in a Global Environmental Facility (GEF) project. The GEF project sought coastal zone protection. The LHNP, part of which forms the northern coastline, had been subject to deforestation caused by both cattle interests and by smaller-scale slash-and burn agricultural activities.

Farmers in the LHNP region have been unjustly blamed for most of this deforestation, believed to have been caused by cultivation of *yautia,* a lucrative tuber (*Xanthosoma* spp.) (Brothers, 1997). Cornell researchers, CEZOPAS extensionists and local farmers began to look for alternatives that would permit the farmers to reduce their migratory agriculture and intensify production in smaller stationary plots. Together they designed an agroecological model called the *"eco-conuco."* The *eco-conuco* " model consisted of beekeeping, goats, agroforestry, and organic farming and was tried by fifty farmers. It was a menu of practices. Raised beds, part of the organic agriculture component, which were intended to improve soil and increase production in smaller plots, were soon abandoned, however. This was due to their labor input requirements and the shortage of labor caused by out-migration. Therefore, other alternatives to sustainable agriculture had to be explored. To that end farmers, extensionists and Cornell researchers traveled to the Rio Limpio (a successful organic agriculture project near the Haitian border) and to Central America to learn from experiences in those regions.

After the eviction from the park in 1992, farmers became suspicious of outsiders. The eviction happened after Spaniards conducted four years of research of the LHNP region. (Agencia Española de Cooperacion, 1991). Trust and collaboration among CEZOPAS, CIIFAD, and farmers was restored by a number of activities, however. CIIFAD made it possible for local farmers, community leaders and CEZOPAS extensionists to visit other protected areas in Central America in 1994. In the next two years, farmers met frequently with extensionists and CEZOPAS leadership to assess their needs, attend a series of workshops on cover crops technology, organized two community fairs, and produced a participatory video.

Methods and Sources of Data:

A case-study approach was used to produce this study. Added to this qualitative effort was historical research in CIIFAD's resource center library, the CIIFAD-Dominican Republic archives, as well as personal observations. The data used to write this paper are contained in GEF project reports, papers and theses written by Cornell faculty and students, handbooks produced from workshops, trip reports written by Cornell researchers, extensionists' reports, audio recordings of meetings, and personal observations during field visits, informal interviews with farmers, extensionists, and extended conversations with Father Lorenzo Vargas, president of CEZOPAS.

Trust -- Building the Backbone of Collaboration:

Collaboration among farmers, extensionists, and research institutions can be very complex and pose challenges to all three sets of actors who have different interests. Extensionists who are trained in a traditional top-down manner believe that their solutions are the best remedies to particular problems. Researchers are interested in getting results from experiments they have designed. At the same time, resource poor farmers are interested in solving an immediate agricultural problem as inexpensively as possible (Lacy, 1996). Farmers around LHNP, who are mistrustful of outsiders, do not readily accept panaceas offered by either extensionists or researchers. These farmers live on the fringes of a chaotic national park situation with uncertain boundaries and few other economic alternatives to extraction.

The most significant element in this partnership is trust. Many farmers in LHNP trusted Father Lorenzo Vargas, president of CEZOPAS, because he had been their committed advocate when they were evicted from the park. Father Vargas introduced Cornell researchers to them at community meetings and reassured them that Cornellians were not affiliated with the government. Cornell researchers advanced this trust by inviting farmers to visit a successful organic agriculture program near the border of Haiti, and later to witness parks in Honduras and Guatemala. Such trips helped Dominican farmers to learn from first-hand experience what farmers in Central America and other areas of the Dominican Republic were using as conservation measures and alternatives to slash-and-burn agriculture. As farmers-researches exchanged ideas during these trips the farmers became less apprehensive of the researchers.

For their part, Cornell researchers deepened their interest in and respect for indigenous farmer knowledge. After this period of "courtship," farmers assisted Cornell researchers as field guides, shared their histories of the park, and showed Cornellians their uses and management of trees, medicines and minor forest products. Through all this, farmers' voices were heard and the top-down, supply-driven research of the university gave way to a demand-driven research in which farmers were respected as researchers themselves.

In the course of this study, the public sector entered the collaborative effort through the extension efforts. CEZOPAS' leadership worked diligently to negotiate extension support from various governmental organizations that work in LHNP. At first, arrangements were made to assign a lead extensionist to CEZOPAS. However, the extensionist lived in Santo Domingo and divided his time across many pursuits. Negotiations were renewed, and CEZOPAS requested that their extensionists should live in the immediate region to be cost-effective (less travel time and more time spent with communities). The government agreed to pay for four extensionists from the Forestry Department, the Department of Agriculture, and Land Resettlement Organization to work exclusively with CEZOPAS and live in the LHNP region. CEZOPAS contributed transportation costs to the field.

These extensionists, who worked for governmental organizations and were assigned to CEZOPAS, struggled to get farmers' acceptance. In time, as regular visits to farmers increased, farmers began to disassociate these extensionists from their governmental affiliates and identified them with CEZOPAS. With this shift in perception, communication between farmers and extensionists improved. A marked change occurred as farmers were acknowledged by university researchers in the presence of the extensionists. The extensionists learned by example and began to adopt a similar linear approach, acknowledging farmers' knowledge. Cornell researchers unobtrusively contributed to trust building among all groups by giving each one more respect in front of the other.

A Common Goal--Reason for Collaboration:

In LHNP the shared goal was to develop an alternative to slash-and-burn agriculture. CIIFAD personnel, together with NGO partners and farmers, worked collaboratively to find more intensive uses of smaller plots outside the park. This initiative focused on cover crops and related technologies that minimize labor requirements, increase yields, and enhance soil fertility without soil loss. Innovative farmers in LHNP began experimenting with cover crops and green manure and have been adapting the technology to their own needs and multi-cropping systems since at least 1995.

Strategies:

A. Participation

Literature abounds with the benefits of participation in agricultural development (Bunch, 1982; Chambers, 1997; Deshler, 1997). For this reason, it was the strategy used in this study. A small cadre of 20 farmers initially participated in farmer-centered cover crops training workshops. The participants included members of the various communities within the LHNP region and periphery zone; CEZOPAS extensionists; the Associación para el Desarrollo de San José de Ocoa (ADESJO, another Catholic NGO); and volunteers from the Peace Corps working in agricultural projects. Four workshops were held from October 1996 to October 1997. At the request of participating farmers, six more workshops have been conducted in communities surrounding the LHNP. The workshop agendas were planned by all parties with much deliberation. Materials consisted of videos about similar experiences in other countries, brochures and kits on cover crop experiences from Honduras, as well as seeds, soils, plants. The classes were facilitated by a mix of Cornell researchers (including a consultant with extensive experience in cover crops), extensionists, and farmers.

A major component of each workshop was a field practice carried out at one of the participant's plot. The hands-on training used took into account farmers' knowledge and their production constraints (such as nutrient poor soils, weed problems, and labor shortage), which were identified in the classroom or the field. Each workshop built on the previous one and became a "continuous effort to upgrade human resources by sharing ideas and concepts and disseminating techniques, methodologies, and skills." (Uphoff et al., 1998). The teaching was spread among Cornell researchers who brought the latest information on the subject of cover crops and green manures technologies, the extensionists who brought field observations, and farmers who shared the successes/failures of their experimentation. Importantly, after attending various training workshops, farmers began experimenting in a more systematic way.

At the crossroads of local knowledge and science were site visits to participating farmers fields. Cornell researchers visited each farmer's experimental site at least three times during the first year. In addition, during the third workshop, all participating farmers, Cornell researchers, and CEZOPAS extensionists visited farmers fields. The farmers dubbed this workshop the "university on wheels" because the bus stopped frequently at the roadside to identify potential cover crops. Site visits promoted greater respect for local knowledge as farmers and scientists interacted around farmers' experiments. The approach described above is a dynamic approach to extension that validates farmers' knowledge, enriches researchers' understanding, and strengthens the extensionists' new role as facilitators. In other words, extension itself was diffusing.

B. Farmer-Centered Research, Education and Extension

As David Deshler (1997) points out, "the ancient roots of farmer-centered research can be found in the oral tradition of resource-poor farmers who have always been engaged in their own agricultural survival." It is precisely the need to survive on less land that has stimulated farmer experimentation in the LHNP. This common goal also inspired the scientists to do demand-based research as opposed to the traditional supply-driven (science) research. The adoption and continuous experimentation of green manures and cover crops in the LHNP depends on a meaningful success rate. Of the participants who attended the workshops, 100 percent have experimented with a variety of familiar (e.g. *cajun cajans, phaseolus*) and/or introduced (*mucuna, canavalia*) species of cover crops and green manures.

Farmers evaluated the technology critically through both experimentation and peer evaluation. Those who experimented saw dramatic visual improvement in their fields. They reported that the soil remained cooler where the cover crops were planted, that there were fewer weeds, and that their crop yields were better than before. They were able to grow crops where they had not been able to before. Of particular importance was a successful experiment using mulch from cover crops to enhance *yautia* outside of the park. Moreover, the cover crops and green manures technology has spread to communities outside the LHNP and according to preliminary site inspections helped farmers survive the devastating effects of Hurricane Georges in September, 1998. (Brache, 1998).

Now farmers are exchanging results of their experiments with each other, with extensionists, and during their visits, with university researchers. This interplay among researchers, farmers, and extensionists reverses the familiar top-down, linear diffusion model and promotes an "equal exchange" wherein the process becomes as important as the product. Researchers respond to both farmers' and NGO's needs, farmers become actively engaged in experimentation, and extensionists step outside the confines of their "expert" role to bridge research institutions and innovative farmers.

Limitations and Opportunities:

There are foreseeable limitations to scaling up. Experimentation with cover crops in the LHNP grew exponentially from 20 farmers the first year to 200 in the second year. Now there are over 300 farmer-experimenters in the LHNP region (CEZOPAS, 1999). Extensionists find that as more farmers engage in farmer-centered experimentation, they have less time to spend with individual farmers. CEZOPAS does not have the human and financial resources needed to continue this successful engagement of farmer-experimenters.

In order to alleviate the shortage of extensionists, farmer leaders from the original participants are being trained as trainers. These volunteer trainers contribute to decentralizing the extension system. Farmer trainers have successfully assumed roles as educators, organizers, researchers, and service providers (Selener, 1997).

In the LHNP region, this farmer-to-farmer approach has served to reintroduce traditional farmer alliances known as *convites* or *tornapiones* that had almost disappeared from these communities due to out-migration. The *convites* are work alliances among farmers (not necessarily family or neighbors but well acquainted friends or those related through *compadrazco*). There are approximately five to eight persons in each *convite*, and they take turns plowing, planting, and harvesting each member's fields. At present there are over 50 *convites* in the LHNP region (over 300 families). The alliances encourage participation by men and women, thereby balancing the gender gap. They also reinforce community solidarity and increase the labor force, and thus, increase productivity. *Convites* are usually not subsidized, but after the vast destruction of Hurricane Georges, CEZOPAS is giving food to encourage such work. This is a temporary arrangement to help the agricultural communities around the LHNP back on a planting schedule.

Educational Importance:

A. Partnerships Can Work

Partnerships that work evolve from relationships that are based on mutual respect. They take patience, understanding and willingness to share the decision-making process. The process described in this paper is significant. A door has been opened in LHNP emphasizing reciprocity. Alternatives to top-down research and extension are being tried on an expanding scale. The linear approach to demand-based learning-sharing has potential for long-term widespread and relevance. It is encouraging to know that similar community-based partnerships have been used in the Zambra/ENDA-Caribe agroforestry project in the Sanchez Ramirez province of the Dominican Republic. There, the farmers too are experimenting with a menu of practices that take into consideration labor and land scarcity. (Geilfus, 1997). In light of the participatory nature of the Zambra project, a cross-visit by LHNP farmers may be appropriate.

B. The Role of the Community in Diffusion

In order to diffuse the LHNP experience beyond the users groups, two forms of education extension are being explored: community fair; and participatory video. The purpose of the fairs is to promote sustainable agricultural practices that have been tried by local farmers. Two have occurred near the park; they were free and open to the public. Over 150 community members attended the events. The fairs served to mobilize community participation and networks to share the knowledge gained by participating farmers, and to engage other institutions in the process, e.g. local school, Department of Wild Life, and local universities. Cornell faculty and students shared their research findings in the LHNP and local residents demonstrated products and crops from the *eco-conuco* model. The fairs also generated income and respect for local micro-industries that make cheese and sweets from local resources. "Most importantly, the fairs encouraged local initiatives and attracted new links among communities within the LHNP region" (Brache and Geisler, 1997).

During the summer of 1998, communities around the LHNP performed local diffusion by producing a participatory video titled "Life and Health of Soil." Its purpose was to teach other communities about local cover crops experimentation. Children from the elementary school were included. They surprised us by reciting a *decima (*a ten-stanza folkloric poem reminiscent of Spanish-Moorish Zejel poetry) about hard-working farmers. The *decima* is an important means of expression in LHNP region where there is a high rate of illiteracy.

The filming process served to "empower the communities to express their needs and tell their stories " (Shaw and Robertson, 1997). The video produced by community members put into a local context participants' experiences with pollution, land degradation as well as cover crops. It expanded the meaning of "distance learning" to include short distance (between neighboring communities). It also served to bridge the gap between cultural, social, and gender distances by allowing community members to produce and share their knowledge that has the potential to reach regional, national and international audiences.

What cannot be conveyed in words is the astounding transformation that occurs as farmers shift from passive recipients to active originators. Perhaps we have here what the French call animators-of-place.

Conclusion:

Partnerships among farmers, research institutions, governmental, and non-governmental institutions are now a working reality in the LHNP region. Information which tended to flow down in theory now flows up and out in fact. This has profoundly changed extension. The collaboration underlying this change has evolved over time through open dialogue and commitment to a common goal. In this case, this was to find alternatives to migratory agriculture. Collaboration and participation makes a difference in people's lives.

Even under the uncertain conditions in which the farmers of LHNP live, over 300 rural families participating in *convites* have reason to think that better possibilities lie ahead because their "lives have been uplifted through their own efforts" (Krishna et al., 1997).

As part of this partnership, researchers at Cornell generate relevant information requested by farmers and extensionists (demand-based research). Extensionists assume the role of facilitators and accept that adoption of any recommendation rests in the hands of the farmers who will adapt the technologies to their cropping systems. And finally, farmers are researchers and trainers as well as producers.

The farmer-to-farmer extension strategy relieves the problem of insufficient human and financial resources that CEZOPAS faced due to increased farmer demand for CEZOPAS' services. The solution rested on decentralizing extension. With a bottom-up approach, farmers in the study accept a commitment to self-education through experimentation and a broad, highly participatory scale. These same farmers are changing from marginalized individuals to outreach leaders in their region.

References:

Agencia Española de Cooperación Internacional, 1991. Plan de uso y gestión del Parque Nacional de los Haitises y areas periféricas. Santo Domingo: Editorial Corripio.

Bunch, R. 1982. Two Ears of Corn: A Guide to People-Centered Agricultural Improvement. Oklahoma City: World Neighbors.

Brache, L. 1998. Personal field observations during assessment team visit to LHNP after Hurricane Georges.

Brache, L. and C. Geisler, 1997. Regional Sustainability Strategies in the Dominican Republic. CIIFAD 1996-97 Annual Report. Ithaca: Cornell International Institute for Food Agriculture and Development.

Brothers, T. 1997. Deforestation in the Dominican Republic: a village-level view. Environment Conservation 24 (3): 213-223.

Chambers, R. 1997. Whose Reality Counts? Putting the First Last. London: Intermediate Technologies Publication.

CEZOPAS, 1999. Informe de técnicos coordinados a CEZOPAS. Bayaguana.

Deshler, D. 1997. Farmer Participatory Research: Ghanian Farmer Experiments for Agriculture and Natural Resource Management. Paper presented at Convergence Conference, Cartagena, Colombia. International Conference on Participatory Action Research.

Geifus, F. 1997/98. From 'Tree-haters' to Tree-farmers: Promoting Farm Forestry in the Dominican Republic. *In* Rural Development Forestry Network. Paper 22d.

Geisler, C. , L. Brache and L. Silberling. 1997. Research Implications for Management Planning in the Los Haitises National Park. *In* Final Report V, UNDP Global Environmental Facility. Ithaca: Cornell International Institute for Food Agriculture and Development.

Geisler, C. 1996. Towards Environmentally and Socially Sustainable Land Reform in the Dominican Republic. *In* Semi-Annual Summary Report III, UNDP Global Environmental Facility. Ithaca: Cornell International Institute for Food Nutrition and Development.

Krishna, A., N. Uphoff, M. Esman. 1997. Reasons for Hope: Instructive Experiences in Rural Development. West Hartford: Kumaria Press.

Laba, M. et. al. 1997. Landsat-based cover map in the Lower Yuna River Watershed in the Dominican Republic. *In* Int. Remote Sensing 18(14)3011-3025.

Lacy, W. 1996. Research, Extension, and User Partnerships: Models for Collaboration and Strategies for Change. *In* Agriculture and Human Values, 13(2) 33-41.

Shaw, J. and C. Robertson. 1997. Participatory Video: A Practical Approach to Using Video Creatively in Group Development Work. London: Routledge.

Selener, D. , J. Chenier, R. Zelaya et. al. 1997. Farmer-to-Farmer Extension: Lessons from the Field. Philippines: IIRR.

Uphoff, N., M. Esman, A. Krishna. 1998. Reasons for Success: Learning from Instructive Experiences in Rural Development. New Delhi: Vistaar Publications.

Zanoni, T., et. al. 1990. La Flora y Vegetacion de los Haitises, Republica Dominicana. *In* Moscosoa 6. Santo Domingo: Jardin Botanico Nacional Rafael Moscoso.

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PERSPECTIVES ON CURRENT AND FUTURE PRIORITIES IN AGRICULTURAL AND RURAL DEVELOPMENT: A QUALITY ANALYSIS WITH IMPLICATIONS TO ENVIRONMENTAL AND HUMAN RESOURCE DEVELOPMENT IN AGRICULTURAL EDUCATION

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Introduction

Shragge (1993) stated that what is needed is an approach which integrates economic, ecological, political, and cultural development as part of a strategy which has the revitalizing and reclaiming of community as its primary aim. He called this "Sustainable Agricultural and Community Development." There are five major principles or action areas which, taken together, provide a framework for building sustainable agriculture and rural area. They are (Shragge, 1993, pp. 18-21):

1) Gaining economic self-reliance: reclaiming ownership of our communities.
2) Becoming ecologically sustainable: developing green, clean and safe environments.
3) Attaining community control: empowering members of a community to make decisions affecting their community, work place, and daily lives.
4) Meeting the needs of individuals: looking after our materials and non-material needs.
5) Building a community culture: getting to know who we are

Events of any development should have a "process" which is on-going, with policies for developing business-oriented services and generally take into account demand for the creation and upkeep of basic infrastructures like water systems, electricity, transport, communications, and indigenous organizations. Kaplan (1996, p. ix)stated that "development is recognized as a major challenge, if not the major challenge, facing us all as we move towards the twenty-first century." He went further that there is no question, however, that those who practice development do so within a terrain which has become highly contested and contentious (p. ix).

The President of Organization for Economic Cooperation and Development (OECD, 1996, p.7) suggested certain disciplines and approaches that are needed in the development agenda in order to gain a better understanding of the driving forces of the socio-economic and political processes of development. Martin (1994), in his lecture titles "Agricultural Extension in Developing Countries" and "Supervision and Administration in Agricultural Extension, " categorized development into two areas-rural community and agriculture development.

In the process and policy of rural community development, human resource development could be the top priority in the development distribution process (Griffin, 1994b). However, most development practitioners and academicians in the field have given a lot of attention to economic and agricultural development. Other professionals like Hommann (1993) and Bryden (1991) emphasized practical distributions of infrastructures. Furthermore, Ramsay (1996) pointed out the future perspectives of development distributions in agriculture and rural development should consider the culture, history and natural environment for the community.

Purpose and Objectives

The following questions have significant implications for the scope of agriculture and rural community development. The possible answers they provide could lead to a better understanding of the development issue.

1) Which dimensions of agriculture and rural development have received the greatest attention by professionals and researchers in the field?

2) What aspects of development are regarded as priorities for the future?

Methods and Procedures

In order to provide helpful answers to the two questions, the procedure has been organized into the following areas: A post-positivistic approach was employed to collect, analyze and interpret data while ethnographic and historical documents were examined and utilized to provide a valid for the information collected.

1. Ethnographic conduct: The scholastic Data-Base in the Iowa State University Central Parks Library was utilized to gather information on agriculture and rural development. A total of 1,437 documents were found giving relevant information on the subject. Out of these, 249 documents were screened carefully. A further selection yielded 45 documents with the key worlds of "Development, Distribution," and/or "Development Sector." Finally, the search was narrowed down to only 11 documents with current information spanning the 1990's on development perspectives in agriculture and rural development.

2. Historical analysis: The following authors with current works between 1991 and 1997 were selected to provide relevant information on historical analysis. Adams (1994), Bryden (1991 in OECD), Gabriel (1991), Griffin (1994), Hess et al. (1997), Hinsdale et al. (1995), Hommann (1993), Kaplan (1996), OECD (1991), Ramsay (1996), Twelvetrees (1996).

3. Distribution areas and the descriptors: The same search process was used to glean out relevant information for distribution areas and the descriptors. The key search words were: Agriculture, Human Resource, Social Economic, Infrastructure, Culture, Organization, Technology, Communication and Environment.

The descriptors were: ⊙ = Mainly referenced dimension in the development,
○ = Moderately referenced, ■ = Slightly referenced,
χ = Negatively referenced by the professional, Δ = Unknown in the document

Findings

Gabriel (1991) proposed three areas to provide understanding of the rural and agricultural development process. Theses are (a) economic-developing a productive foundation for the community or national population through production of goods and services; (b) social- a range of services and opportunities which respond to human requirements; and lastly (c) human-developing people as individuals and in communities, using their skills and knowledge in forming their own society (p.52). He further pointed out that most attention is usually given to the first of the three areas, with less accorded to social issues, and least to human concerns. This development distribution is gradually being recognized to be inappropriate (p.53).

Another new perspective for rural development was proposed by Bryden (OECD, 1991, p.43). He stated "new ways of providing and managing services in rural areas must take into account the needs of local populations, as well as cost, access and quality." The analysis of his views based on four groups of development services is depicted in Table 1.

Table 1. Summary of the Explanation of the dimensions of the development services by Bryden in OECD (1991).

1) services to guarantee basic physical conditions, and overcome locational disadvantage, such as telecommunications infrastructure, electricity and water supply, waste disposal, roads and transport;
2) services to guarantee basic social conditions, such as education, health services and housing;
3) develops to enterprise: direct or indirect aid (including information management, accounting services, training or research and development) as well as other services (advanced telecommunications services, banking and insurance);

The four dimensions enumerated in Table 1 are closely associated and they need to be dynamically interactive to enhance the effectiveness and success of the development process.

Another grand view for development perspectives on agriculture and rural development was elucidated by Hess et al. (1997). According to the authors who were economists, development can be divided into three processes- (I) agriculture, (ii) natural resources and the environment, and (iii) industry and services. Here, the economic factor was the main focus of this perspective.

Hinsdale and Lewis (1995) argued that community development comes from the people and it is developed by using organizations, culture and leadership. They further stressed that the most useful approach in community development is active participation by the people within the organization and in the community. They viewed economics, infrastructures, natural resources as factors that can be worked out by the people themselves. This approach is fundamentally based on human resource development.

Adams (1994) in his book titled "Local Planning and the Development Process, " identified four development distributions as land property, market, politics, and public resources. He explained the functions off market economy, agricultural marketing systems, farm land and geographical markets, and articulations between politics and development planning. He tried to categorize the development distributions as natural resources, economic, human resources and social.

Another approach to agriculture and rural development was offered by Hormmann (1993), suggested three distributions namely (i) local development, (ii) traffic and transportation, and (iii) housing and methodology for planning. He posed two questions "What's it like being a planner?" and "What does a planner do?" For a start, a new planner gets to know the local area inside an out. The procedure involves reading all the published materials available, as well as viewing every block of the area personally (p.63). In his own book, Twelvetrees (1996), suggested other dimensions for the rural and community development in the modern society. The author introduces 'Community Development Corporations' (CDCs) perspective. The term "CDC" was originally from "Neighborhood Development, " where it was applied to community service organization and united neighborhoods organization. The example of Los Angeles as a new model for national and international community development project was given, whereby the community utilized the CDCs to develop organizations based on human resources development.

OECD (1991, p.7) in the book titled "New Ways of Managing Services in Rural Areas," accounted for a greater proportion of value added products than other productive activities such as agriculture, mining and quarrying, building and public works or manufacturing. According to the organization, the development of services has had a twofold impact on the community in that it has contributed not only to the growth of value added products but also to job creation." For example, services in the broadest sense now account for over 60 per cent of total employment in the OECD countries, and the transfer of labor from farming to services has radically affected rural economies (OECD, 1991, p.7). According to the report, this expansion of employment in almost all branches of the services sector may be expected to contribute over the next decade.

Kaplan (1996), in his own perception, described rural development in relation to biological, human and organizational development processes. The biological process viewed development as human unfolding within the context of organizational dynamics and the biological ecosystem as the development processes. This implies that sustainable farming regarding community development and human labor should be reconsidered in the distribution process.

Finally, Ransay (1996) in the book titled "Community, Culture and Economic Development," promoted a different perspectives to bring together knowledge from multidisciplinary sources to focus on a specific problem or topical area. Ramsay did not agree with the economic approach to rural community development because it contended that the benefits and costs of development would be unevenly distributed within the community. Also local culture and history affect the process of development rather than its economics because of perceived threats to the freedom and way of life of the community. The people may values and its effect on the quality of life. Presently, Ramsey's book is enjoying unique popularity within academic institutions and the development arena.

Conclusions

The different perspectives and areas on development is summarized in Table 2 and as can be seen, the main distribution areas of emphasis are agriculture, human, social, economic, infrastructural, cultural, and organizational issues. The selected documents revealed that human resource and economic distribution received the greatest attention of researchers and professionals. Human resource development was emphasized as the most positive and moderately emphasized area in the agricultural and rural development perspectives. The economic distribution was treated as a strong area but some negative views were also considered simultaneously. The implication is that economic distribution now tends to gain a second place within the development distribution process. Presently, environmental perspectives, accountability for public resources and human resource development are gaining precedence over and above economic considerations.

Table 2. Results of the major perspectives regarding development distribution areas referenced by the professionals

Professionals	Agri	Human	Social	Economic	Infras.	Culture	Organi.
Gabriel	Δ	⊙	○	⊙	Δ	χ	···
Bryden	··	○	○	Δ	⊙	···	Δ
Hess	⊙	Δ	···	⊙⊙	Δ	···	χ
Hinsdale et al.	○	⊙	···	Δ	···	⊙	⊙
Adams	○	Δ	Δ	⊙	○	χ	Δ
Homman	···	○	○	○	⊙⊙	○	Δ
Twelvetrees	···	⊙	○	Δ	Δ	○	⊙
OECD	○	○	Δ	○	○	Δ	Δ
Kaplan	○	○	χ	Δ	χ	Δ	○
Ramsay	Δ	⊙	Δ	χ	○	⊙	Δ
Griffin	○	⊙	···	○	○	···	Δ

Descriptors: ⊙ = Mainly emphasized dimension in the development
○ = Moderately and positively emphasized
Δ = Slightly emphasized and/or with negative perspective
χ = Negatively emphasized by the professional
··· = Unknown in the document

Some professionals emphasized perspectives of technology, communications and the environment (natural public resource) with human resource and economic distribution areas in the agricultural and rural development. Agricultural concerns are central to rural development activities and general for the concerns nation's farming sector and livelihood of the majority of its inhabitants are usually expressed in terms of rural development projects. Agriculture and rural development, then, integrates economic and social objectives in seeking to create better and more secure livelihoods for farmers and rural people. The new paradigm development now implies a qualitative change and is never "instead of" but always "as well as." Agricultural education is being faced with on how to prepare for and develop the environmental and human resources not as ongoing confliction each other on the production ecosystem.

References

Adams, D. (1994). *Rural & Urban Planning and the Development Process.* London: UCL Press.

Bernick, M. & Cervero, R. (1997). *Transit Villages in the 21st Century.* New York : McGraw-Hill.

Bryden, D. (1991). *New Ways of Managing Service in Rural Areas.* OECD Press.

Gabriel, T. (1991). *The Human Factor in Rural Development.* New York.

Griffin, K. & McKinley, T. (1994b). *Implementing A Human Development Strategy.* Houndmills, London: MacMillan.

Hess, P. & Ross, C. (1997). *Economic Development: Theories, Evidence, and Policies.* The Dryden Press.

Hinsdale, M. A., Lewis, H. M., & Waller, S. M. (1995). *It Comes from the People: Community Development and Local Theology.* Philadelphia, PA: Temple University Press.

Hommann, M (1993). *City Planning in America between Promise and Despair.* Connecticut: Prager Press.

Kaplan, A. (1996). *The Development Practitioner's Handbook.* Chicago, IL: Pluto Press.

Leat, D. (1993). *The Development of Community Care by the Independent Sector.* London: Policy Studies Institute.

Loew, S. (19790. *Local Planning.* London: Pembridge Press.

Martin, A. (1994). *The 625 AGEDS and 561 AGEDS Courses and Materials.* Department of Agricultural Education and Studies, Iowa State University, Ames, Iowa.

OECD (1991). *New Ways of Managing Service in Rural Areas.* New York :OECD Press.

Ramsay, M. (1996).*Community, Culture and Economic Development: The Social Roots of Local Action.* Albany, NY: University of New York Press.

Schneider, H. & Libercier, M. (1995). *Participatory Development from Advocacy to Action.* OECD Press.

Shragge, E. (1993). *Community Economic Development: In Search of Empowerment and Alternatives.* New York: Black Rose Books.

Twelvetrees, A. C.(1996). *Organizing for Neighborhood Development :A Comparative Study of Community Based Development Organizations.* Aldershot: Avebury Press.

Zijp, W. (1994). *Improving the Transfer and Use of Agricultural Information: A Guide to Information Technology.* Washington, D.C.: The World Bank Press.

Session E Extension Management

March 23, 9:00 - 11:00 a. m.

Session Chair - Henry Bahn

Location: St. Ann's Room

TITLE: County Extension Administrators: Are They Prepared for the 21st Century?
AUTHOR: Bill R. Haynes
Ohio State University
DISCUSSANT: Ronald Shearon

TITLE: Roles, Costs and Values of Agricultural Extension in South Africa: The Need for Transformation in the New Democracy
AUTHOR: PA Donovan, AB Tucker
South Africa
DISCUSSANT: Ronald Shearon

TITLE: Managing Public Sector Extension: Some Critical Issues
AUTHOR: Dunstan A.C. Campbell
Castries, St. Lucia
DISCUSSANT: Roger Steele

TITLE: Strategic Planning For Accountability: Implications for International Programs
AUTHOR Richard T. Liles
North Carolina State University
DISCUSSANT: Roger Steele

COUNTY EXTENSION ADMINISTRATORS: ARE THEY PREPARED FOR THE 21ST CENTURY?

by
Bill R. Haynes, Ph. D.
Ohio State University Extension
The Ohio State University

The Cooperative Extension System today is a unique achievement in education. It is an organization for change and for problem solving, a catalyst for both individual and group action with a history of over eighty years of public service. Through the Extension system, all segments of our extraordinarily diverse population are able to reap the benefits of higher education (Rasmussen, 1989).

The system itself includes professionals in America's 1862 Land Grant institutions in each of the fifty states, as well as the District of Columbia, Tuskegee University, sixteen 1890 Land Grant institutions, and twenty-nine Tribal colleges. There are also Extension organizations in Puerto Rico, the Virgin Islands, Guam, American Samoa, the Northern Mariannas, and Micronesia (U.S. Department of Agriculture, 1994).

At least one professional Extension staff member works in each of the nation's 3,150 counties. In addition, thousands of paraprofessionals and nearly three million volunteers work directly with the program staff to bring Extension educational programs to the public (Rasmussen, 1989).

Keeping an organization as large and complex as the Cooperative Extension System operating smoothly requires effective and efficient management. Peter Drucker (1977), the noted authority on management states that managers are inevitable, and the job of management cannot be evaded.

Effective and efficient management is critical to the success of Extension organizations. Many are faced with reductions in human, material, and economic resources and must focus those resources more narrowly to maintain high quality programs.

The structure of a typical Extension organization also contributes significantly to the need for effective management. Fragmented both programmatically and geographically, the organization must rely on managers at several levels to effectively utilize economic, human, and material resources to address specific as well as general issues. The managers must perform these management functions while remaining within the parameters of the organization's mission, vision, and values.

The largest group of managers in Extension and among the most critical are the first line managers, the people who give leadership to the more than 3,100 county and local Extension offices throughout the country. Carrying various titles such as County Chair, County Director, and Unit Leader, these individuals are charged with administrative, economic, and programmatic responsibilities including securing adequate accommodations, equipment, supplies, and staff to support the unit's mission; serving as supervisor and personnel administrator for program and support staff in the unit; securing sufficient economic resources to support the unit's operation; maintaining a positive image for the unit through effective public relations efforts; and providing leadership to foster harmonious relationships and effective performance in the unit (Buford, Bedeian & Lindner,1995).

In over 3,100 county Extension offices across the nation, one individual is usually assigned the responsibility of leading and managing the office. The overwhelming majority of these managers have program as well as administrative responsibilities. Most of them joined the organization in a program capacity rather than in an administrative role and assumed their administrative functions by appointment, election or default. Possessing strength in several identified behavioral dimensions relevant to effective management enhances the effectiveness of county Extension chairs.

Research has shown that the assessment center method has been used successfully to select and develop Extension county chairs (Kwarteng, 1986; Bart, 1986; Ishaya,1991). There has been no research to determine how factors other than performance in the assessment center (e.g. age, gender, program area, tenure in Extension, and administrative experience) affect the assessment of the supervisory/management competencies of participants.

PURPOSE OF THE STUDY

The overall purpose of this descriptive-correlational study was to describe the Extension employees who completed the Assessing Supervisory and Management Skills Assessment Center at the Minnesota Extension Summer School and the Ohio State University Extension County Chair Assessment Center between the years 1989-1995. A second purpose was to ascertain their responses to the feedback and insight they received as a result of their participation regarding their observed strengths in fifteen supervisory/management competencies.

OBJECTIVES OF THE STUDY

The specific objectives of the study were:

1. To describe personnel who completed the Assessing Supervisory and Management Skills Assessment Center at the Minnesota Extension Summer School and the Ohio State University Extension County Chair Assessment Center during the years 1989-1995 on the following characteristics: a) age; b) gender; c) length of time as an Extension employee; d) program area responsibility; e) length of time in a leadership/ administrative position; f) position at time of completing assessment center; and g) summary of supervisory/management competency scores at time of completion.

2. To describe professional development undertaken by personnel completing the Assessing Supervisory and Management Skills Assessment Center at the Minnesota Extension Summer School and the Ohio State University Extension County Chair Assessment Center as a result of the feedback they received.

3. To describe changes in behaviors related to the fifteen competencies observed during the Assessing Supervisory and Management Skills Assessment Center and the Ohio State University Extension County Chair Assessment Center which resulted from the feedback and personal insight.

4. To examine relationships between the characteristics of the target population and observed strengths in fifteen supervisory/management competencies observed during the assessment center.

5. To describe the participants' current perception of their strengths in the fifteen supervisory/management competencies observed during the assessment center.

The independent variables in the study were: age, gender, tenure in Extension, tenure in a supervisory/management position, and program area at the time of participation in the assessment center. The dependent variables were the 15 supervisory/management competencies observed in the assessment center. A census was conducted of all Extension professionals who had completed an Extension assessment center during the years 1989-1995. A two part mail questionnaire was utilized to determine demographic characteristics as well as participants' perceived current level of competence in the 15 management competencies, the steps they took to improve their skills, and the behavioral changes they had implemented as a result of their participation. Assessor scores were collected from records at The Ohio State University. Descriptive statistics were used to organize and summarize the data. Discriminant analysis was used to determine differences between groups who showed above average strength in the 15 management competencies and those who showed average or less strength with regard to demographic variables.

POPULATION

The population for this study was the Extension professionals who completed the Assessing Supervisory and Management Skills Assessment Center at the Minnesota Extension Summer School and the Ohio State University Extension County Chair Assessment Center for the years 1989 through 1995 (N=150). The Assessing Supervisory and Management Skills assessment center at the Minnesota Extension Summer School and the Ohio State University Extension County Chair Assessment Center are similar experiences and both are conducted by the management team of the Ohio State University Extension County Chair Assessment Center.

Seventy-eight Extension professionals from twenty two states and one foreign country participated in the Assessing Supervisory and Management Skills Assessment Center at the Minnesota Extension Summer School during the years 1989 through

1995. Seventy-two Extension professionals participated in the Ohio State University Extension County Chair Assessment Center during the same period of time. Each state's personnel office was contacted to determine current employment and address. Based on information gathered, 23 individuals were not included in the study because they were no longer employed by the Cooperative Extension System. A census of all Extension professionals who had completed either of the assessment centers and who were currently employed by the Cooperative Extension system was conducted (N=127). All participants in the study self selected to participate in the assessment center process. The results were not generalized beyond the target population.

COMPOSITE SUPERVISORY/MANAGEMENT PROFILE OF EXTENSION ASSESSMENT CENTER PARTICIPANTS

Fifteen supervisory/management competencies were observed and assessed in the Extension assessment center. The fifteen competencies included: oral communication; planning/organizing; leadership; decision making/judgment; initiative; objectivity; development of coworkers; perception; sensitivity; management control; collaborativeness; written communication; behavioral flexibility; organizational sensitivity; and assertiveness.

The group of Extension professionals who completed the assessment center had modal ratings of average to very good in all fifteen supervisory/management competencies observed in the assessment center process. The competencies of oral communication, planning/organizing, decision making/judgment, initiative, objectivity, perception, sensitivity, collaborativeness, written communication, and organizational sensitivity had the highest modal ratings as observed by the assessors.

The group self reported their current level of competence in the fifteen supervisory/management competencies to be higher than the assessor scores. Participants rated themselves as very good in all of the competencies except management control where they rated themselves as being average (Table

RESULTS OF THE DISCRIMINANT ANALYSIS

Group performance in fifteen supervisory/management competencies was studied in relation to the demographic variables gender, age, tenure in Extension, tenure in a supervisory/management position, and program area. Discriminant analysis revealed that the groups differed in three of the competencies with respect to at least one demographic characteristic. For the supervisory/management competency leadership, the group demonstrating above average strength had more tenure as an Extension employee and contained fewer members from the family and consumer science, 4-H youth development, and community/economic development program areas than the group demonstrating average or less strength. For the supervisory/management competency development of coworkers, the group demonstrating above average strength had longer tenure as an Extension employee, had longer tenure in a supervisory/management position, and contained fewer members from the agriculture/natural resources, 4-H youth development, and community/economic development program areas than the group demonstrating average or less strength. For the supervisory/management competency behavioral flexibility, the group demonstrating above average strength contained more females and fewer members from the community/economic development program area than the group demonstrating average or less strength. The groups did not differ significantly with respect to the discriminating variables in the twelve remaining supervisory/management competencies.

ACTIONS TAKEN TO IMPROVE SUPERVISORY/MANAGEMENT SKILLS AFTER PARTICIPATION IN THE ASSESSMENT CENTER

Actions were taken by the participants to improve their skills in all fifteen supervisory/management competencies observed in the assessment center. Leadership was the most frequently addressed competency, followed by planning/organizing and oral communication. Perception was the least addressed competency, followed by initiative.

The most common method of skill improvement utilized by the participants was self directed learning (audio tapes, video tapes, reading, etc.). The participants reported 597 occasions where they utilized self directed learning to improve one or more of the supervisory/management competencies observed in the assessment center. Workshops or seminars were the next most common method of skill improvement utilized by the participants with 483 incidences reported. Formal class work was the least utilized of the professional development methods surveyed with 71 incidences being reported by the assessment center participants.

CHANGES IN BEHAVIORS RESULTING FROM FEEDBACK AND PERSONAL INSIGHT FROM PARTICIPATION IN EXTENSION ASSESSMENT CENTERS

Participants reported changes in behaviors as a result of the feedback they received from their participation in the assessment center. Several themes and patterns emerged.

ORAL COMMUNICATION - Participants reported an increase in listening skills and slowing down the pace of their conversations to insure clarity and greater understanding when communicating with others. They also reported a increased awareness of body language and an increased sensitivity to the communication styles of others.

PLANNING/ORGANIZING - Participants reported a greater use of planning "tools" such as planners and calendars. They also reported an increased use of goal setting as well as priority setting techniques to handle critical issues.

LEADERSHIP - Participants reported increased use of delegation, shared decision making, and teamwork. Participants also reported greater utilization of flexible or situational leadership, utilizing the style that was most appropriate for addressing the issues or situations at hand.

DECISION MAKING/JUDGMENT - Participants reported being more open minded to alternative options, setting aside personal feelings before making decisions, and increased utilization of group or shared decision making when issues involved the office teams.

INITIATIVE - Participants reported deliberate efforts to be proactive rather than reactive. They also reported using priority setting techniques to address important issues.

OBJECTIVITY - Participants reported improving listening skills, gathering more information before making decisions, and carefully assessing conclusions before making decisions. Participants also reported conscious efforts to appreciate diversity of viewpoint and differences among people.

DEVELOPMENT OF COWORKERS - Participants reported consciously recognizing the accomplishments and contributions of others. Participants delegated more responsibility to coworkers, encouraging them to take risks and stretch beyond their comfort zone.

PERCEPTION - Participants reported greater efforts to examine issues from alternative perspectives. They also reported increasing their listening and observation skills to help them understand better what was being communicated.

SENSITIVITY - Participants reported an increased consideration of others' feelings before acting. They also reported using Myers-Briggs training to help them better understand differences in personalities.

MANAGEMENT CONTROL - Participants reported monitoring and utilizing resources more carefully for accountability. They also indicated an increased use of computer software to assist them with management functions.

COLLABORATIVENESS - Participants reported an increased utilization of team decision making in their Extension units as well as with other groups, agencies, and organizations in the conducting of Extension educational programs.

WRITTEN COMMUNICATION - Participants reported an increased use of computer and electronic technology. They also reported efforts to adapt their writing to the appropriate level of their audience.

BEHAVIORAL FLEXIBILITY - Participants reported being more flexible in their day to day operations and managing multiple tasks. They also reported slowing down responses, keeping emotions in check and considering situations in appropriate contexts.

ORGANIZATIONAL SENSITIVITY - Participants reported attending professional development sessions to keep abreast of current organizational policies and procedures. They also reported being more careful in utilizing appropriate administrative channels to address organizational concerns.

ASSERTIVENESS - Participants reported efforts to become more assertive without being aggressive. They reported an increased level of confidence in their own abilities and a greater willingness to share opinions and ideas with others.

CONCLUSIONS

Based on the review of literature and the findings related to the objectives, the following conclusions applicable to the population of this study were reached:

1. Participants who completed Extension assessment centers during the years 1989 through 1995 possessed average to very good strengths in all of the 15 supervisory/management competencies observed in the assessment center process.
2. Using modes and frequencies as indicators, participants who completed Extension assessment centers during the years 1989 through 1995 possessed the most strength in the competency oral communication, followed by collaborativeness and written communication.
3. Using modes as indicators, the participants who completed Extension assessment centers during the years 1989 through 1995 possessed the least strength in the competencies leadership, development of coworkers, management control, behavioral flexibility, and assertiveness..
4. Participants who demonstrated above average strength in leadership tended to have longer tenure as an Extension employee and tended not to be from the family and consumer science, 4-H youth development, or community/economic development program areas.
5. Participants who demonstrated above average strength in development of coworkers had longer tenure as an Extension employee, had longer tenure in a supervisory/management position, and tended not to come from the agriculture/natural resources, 4-H youth development, or community/economic development program areas.
6. Participants demonstrating above average strength in behavioral flexibility tended to be female and tended not to come from the community/economic development program area.
7. Demonstrated strength in the supervisory/management competencies of oral communication, planning/organizing, decision making/judgment, initiative, objectivity, perception, sensitivity, management control, collaborativeness, written communication, organizational sensitivity, and assertiveness was not affected by gender, age, tenure in Extension, tenure in a supervisory/management position, or program area.
8. Participants took positive steps to improve skills in supervisory/management competencies as a result of feedback and insight gained from participation in Extension assessment centers.
9. Self directed learning (audio tapes, video tapes, reading, etc.) was the most widely utilized method utilized to improve skills in the supervisory/management

competencies.

10. Participants implemented changes in behaviors which improved their skills and effectiveness in the fifteen supervisory/management competencies observed in the assessment center as a result of the feedback they received and the insight they gained from their participation.

REFERENCES

Bart, L.A. (1986). The role of the assessee in developmental assessment centers: A field experiment. Unpublished Ph.D. dissertation, The Ohio State University.

Buford, J.A., Bedeian, A.G., and Lindner, J.R. (1995). Management in extension, The Ohio State University, Columbus, Ohio.

Drucker, P.F. (1977). People and performance, New York: Harper's College Press.

Ishaya, J.B. (1991). Relationships between psychological types and assessment center performance of ohio cooperative extension agents. Unpublished Ph.D. dissertation, The Ohio State University.

Kwarteng, J.A. (1986). Correlates of county chairperson performance in the ohio cooperative extension service assessment center. Unpublished Ph.D. dissertation, The Ohio State University.

Rasmussen, W.D. (1989). Taking the university to the people. Iowa State University Press, Ames, Iowa.

ROLES , COSTS AND VALUES OF AGRICULTURAL EXTENSION IN SOUTH AFRICA: THE NEED FOR TRANSFORMATION IN THE NEW DEMOCRACY

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ABSTRACT

The paper reviews public and private extension in South Africa, the conflicts that have inhibited the effectiveness, the cost and estimated values.

It then discusses the three agricultures in South Africa, *commercial, subsistence* and emerging *small scale,* each requiring different extension programmes.

Agricultural extension provided by the Government in the past has served mainly large scale farmers where regulatory functions sometimes conflicted with technology transfer. Subsistence and most small scale farmers are located on tribal land without security of tenure, were provided with poor infrastructure and services, and were without adequate and appropriate public extension. Their priority is for improved infrastructures and social services, and not for professional agricultural extension.

The future challenge for extension is to address the needs of the third and newest form of agriculture, the emerging small scale commercial farmers, who have the potential for making a major impact on the economy of rural populations. This could alleviate the serious problems of urban drift associated with poor job opportunities and poverty.

The paper argues that Government should not be responsible for agricultural extension for the whole of agriculture in South Africa, but should concentrate its limited resources on the poorer farming communities. It should give first priority to developing small scale agriculture where community development, rather than agricultural extension, is required. Its second priority should be to enter into joint ventures with agricultural commodity associations to develop extension programmes to enable small scale commercial farms to be viable entities.

Finally, extension and research for large scale commercial agriculture should be managed and funded by their own resources, and not by Government.**(265 words)**

INTRODUCTION

Bembridge (1979) defined agricultural extension in South Africa as ".. assisting farmers to improve their level of efficiency by integrating the most suitable package of practices into their farming enterprise, aimed at improving efficiency and profit per unit of production, *with the final objective of improving the quality and standard of living of rural communities".*

This definition is no longer appropriate in the new South Africa with its three different agricultures, as it lacks essential commitment to social, agricultural and environmental obligations to the people in the tribal areas who outnumber the commercial farmers by a wide margin.

The future rôles of extension must acknowledge that the three agricultures are different. Therefore the programmes and the extension workers required to serve them should be adapted if conflicts are to be avoided and progress made.

CONFLICT IN EXTENSION

Duvel (1986) describes conflict caused by forces working in opposite directions. The conflict experienced by extension was between the social responsibility of conserving natural resources (which frequently meant policing) and the profit-motivated demands of farmers for technology transfer to increase production from the land.

Today, conflict in extension and research is wider, and includes the conflict between the needs of *subsistence, emerging* and *commercial* farmers, which can be minimised by having three kinds of extension.

Firstly, extension for subsistence farmers has the mission of up-lifting rural standards of living and ensuring land use is sustainable. This is a social function and therefore a responsibility of government. Extension for for small scale farmers, the second group, has the mission of increasing the productivity of their agriculture, but they, like the subsistence people, suffer from the same handicaps and need social development as well as advice on commercial farming. If they are to succeed, single commodity agriculture must form joint ventures with Government for the well-being of emerging farmers who have both social and commercial aspirations to satisfy.

The third kind of extension is for large-scale commercial agriculture, which has the mission of increasing productivity and profitability of farmers in harmony with the environment, but which has no social connotations. This kind of extension should be the responsibility of the farmers and their supporting agri-businesses, who have the capacity to do so.

THE RÔLES OF EXTENSION

In Subsistence agriculture: The needs of the majority of the 18.8 million people living in tribal areas are primarily social factors with agriculture rating fifth in their hierarchy of needs (Auerbach, 1991). Their inherent disadvantage of competing with commercial agriculture, their lack of institutional support, difficult access to markets, and the inadequacy of land and insecurity of its tenure, will always restrict them to home gardening with basic food crops to improve their diet.

Extension needs in subsistence 'agriculture' are primarily for practical advice on home gardens which a social worker with elementary training in horticulture, and employed by the local authority, could provide. It is inappropriate to employ qualified extension staff for subsistence agriculture.

In small-scale agriculture: There are two kinds of small-scale agriculture; *small-holdings* and *small-scale commercial farming,* both usually in tribal areas but the latter generally adjacent to commercial farming areas.

It is unrealistic to treat *small-holding* agriculture as a viable agricultural system with long term prospects. Previous attempts in Southern Africa to transform agriculture in this way have all failed. The factors militating against it are the same as those limiting subsistence agriculture. The needs are for market access and inputs such as seed and fertiliser, rather than for the transfer of production technologies. This calls for a general, non-specialist extensionist, preferably a local resident, and employed by the local authority.

Small-scale commercial farming is of two kinds in terms of extension requirements. Small scale *single commodity* farming and small scale *multi-product* farming. The former has better prospects of success as it is in the financial interests of the commercial agricultural industry of which it is part, to support it. The sugar and timber industries are typical examples of large mono-crop organisations where small scale farmers are involved in South Africa. The extension requirements of small scale sugarcane farmers are mostly for financial facilities and production technology, which are provided by the sugar industry, while government provides other services in successful joint ventures which offer the best long term prospects.

Extension for small scale multi-product farming is only funded and provided by government. Its top-down extension style, lack of market security and availability of finance have generally led to few successes. However, some good results have been achieved by non-government organisations such as the Institute of Natural Resources at the University of Natal.

A fundamental change for extension and research to participatory, farmer orientated programmes is required for small scale agriculture. It is clear that only when reliable market opportunities occur, the necessary infrastructures and services are in place, adequate resources are available and security of tenure is assured, will it be possible to overcome previous shortcomings. In this respect, partnerships between Government and the private sector offer the best prospects, and these need to be encouraged if small scale agriculture is to become a strong and permanent component of rural stability and well being.

In Commercial agriculture: There are two kinds of extension in commercial agriculture, one provided and funded by government serving the interests of both farmers and the public interest called *Public Extension*, and the other, provided for, and funded exclusively by the farmers involved in the production of the specific crop, which is known as *Commodity Extension*.

Public Extension engages in a range of activities, including technology transfer. The extensive and diverse nature of the extension functions induce the conflict syndrome already described in the paper, restricting its effectiveness.

Commodity Extension, as typified by that of the South African Sugar Association's Experiment Station (SASEX) is in stark contrast to Public Extension. Close integration of research, extension and technical services, and a structured involvement of farmers in planning their strategy and tactics, provides a relatively conflict-free, 'bottom-up' decision making process. This leads to well focussed programmes, regular interaction with farmers enabling feedback and evaluation. In addition, the extensionist shows a stronger personal commitment and gains greater job satisfaction.

Fundamental differences exist between Public and Commodity extension, and these may lead to a lower or slower success rate in the former for the following reasons:

In Public Extension:

- the farmers felt needs may have a lower priority than the political and social priorities determined by government, leading to 'top down' management;
- there are barriers to effective extension within the complex of farmer - extension - research in commercial agriculture, where separate organisations are responsible for research and extension, causing a credibility gap in the mind of the farmer;
- insufficient recognition is given to the specific needs of the three agricultures.

In Commodity Extension:

- the farmer is the stakeholder and funds for his extension requirements have the highest priority;
- extension provides the essential link between the farmer and research and is unhindered by external pressures or political scenarios;
- there need be no communication barriers in the farmer - extension - research relationship as they all belong to the same organisation, and collaborate closely;
- the needs of the small scale growers cannot be overlooked as they are also stakeholders.

COSTS OF EXTENSION

Few estimates have been made of the costs of extension. Most have been based on surrogate factors such as the numbers of farmers visited and distance travelled which are of doubtful significance and value. The allocation of finances in most agricultural organisations categorise item costs, and not in functions such as *extension, research and technical services* making it difficult to identify them separately.

Donovan (1997) estimated extension's share of the South African government's agricultural expenditure at 10,6%. Of this, 9,33% was spent on the 62 500 commercial farmers, or US$ 17,50* per farmer, and 1,27% was spent on the 1,75 million small scale farmers, equivalent to US$ 1 per farmer.

By contrast, an estimate of the costs of the functions of SASEX was undertaken in 1983 (Anon), This indicated that Extension accounted for 11,22% of the total SASEX expenditure, equivalent to US$m 0.87 at 1996/97 prices. In 1983, therefore, the cost of extension was about US$375 per large scale commercial sugar cane grower and US$25 per small scale cane grower.

A second estimate of the cost of SASEX extension was made (Donovan, 1986) by apportioning total SASEX costs among its various departments. In 1985/86, expenditure on extension amounted to 10,9% of SASEX costs or US$m 0.86, amounting to US$ 445 per large scale cane grower and US$30 per small scale cane grower (the close similarity of these costs indicate a high degree of reliability).

Since 1994/95 the SASEX accounts have been structured by function, enabling estimates of costs to be more direct and relevant. The cost of extension at SASEX in 1996/97, was US$m 1.09 (Southey RD, pers com.). With 1 666 large scale and 54 370 small scale growers, the costs per grower were US$474 and US$5.50 per grower respectively (note there was a large increase in small scale growers at this time).

In 1996/97 the large scale sugarcane growers were provided with 13 Extensionists by SASEX. Small scale sugarcane growers were provided with 5 SASEX Extensionists and 40 junior Extensionists by Government, the cost of which was subsidised by the sugar industry to the extent of approximately US$m 0.125. The balance to fund the 5 Extensionists from SASEX was provided by government costing U$m 0.31 or US$ 5.50 per grower (which is about 5 times more than was spent on other small scale farmers in 1991).

This successful example of the economic and social advantages of joint venture extension partnerships between a commodity organisation and a government agricultural department, illustrates how their combined resources provide an extension service that neither partner could adequately provide on their own.

It is important to note that the cost of commodity extension is negligible (0,1% of the total production cost of sugarcane) in comparison with other inputs. As extension has the capacity to improve the cost effectiveness of all the other inputs, it is logical to assume it is an essential service, with a positive return on the investment.

RETURNS ON EXTENSION

In today's 'results-orientated' world, Extension like any other service, must advertise its achievements and establish its worth (Paxton & Culverwell, 1988), but most evaluations of extension are merely descriptive or qualitative, and not correlated directly with productivity.

Superior parameters would be increases noted in a farmer's skills or the adoption of new technology, but these are difficult to quantify and are also not necessarily correlated directly with productivity or profitability. To be credible, it is necessary to measure the impact on the level of production as a result of the adoption of technology with an improved farming practice. This requires quantifying the relative contributions of research and extension to the technology that has been adopted.

A recent study on *public sector multi-product* extension in South Africa (van Zyl & Thirtle, 1996), using a profit function approach, found the internal rate of return on extension provided by Government to be only 3%, and on research to be 44%. Estimating returns from investment in research and extension in *commodity agriculture* is less difficult than in public-sector multi-product agriculture where the data required are often difficult to identify and collate.

Araji (1980), using interview data, found extension's contribution to the *future* effectiveness of research programmes to be between 60% and 78% depending on the commodity. This can only be an estimate of extension when the effect of the research on productivity is eventually measured.

A practical estimate of the value of extension was obtained in an investigation of the productivity of wool and mohair farmers on the Tarka River (in South Africa) in 1988. Net farm income was estimated to increase 27% with a 13% increase in the irrigated area, compared with an increase in net farm income of 236% by the input of additional extension costing less than US$ 6.50 per hectare (Donovan 1988).

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* Conversion of SA Rand to US$ at end of first quarter of 1996, when the rand values quoted in this paper were applicable, was US$1 = 3.997 SA Rand.

Ex-ante estimates are particularly useful in strategic planning but are of little use in estimating the *ex-post* value of a function, programme or technology.

Huffman (op.sit.) found the returns on extension varied from nil to a *social rate of return* of 110%. This was made up of both the return to an individual producer or allied industry (i.e. gross profit), plus the benefit to society (i.e. all the benefits emanating from the employment of people to the exchange value to the country when the commodity is exported). The social benefit is usually much greater than the private return component. In a study of R&D in the Malawi tea industry, Donovan and Limwado (1995) found the social benefit to be 44 times greater than the private return.

Two studies of the SASEX costs and returns have been made. The first, in 1983 (Anon, op. sit.), was an exercise in cost effectiveness in which the return on extension, 48%, was obtained by assuming it to be equal to the return on research (they were considered to be of equal importance in the SASEX strategy). As it involved a degree of guess work, the estimated returns on R&D were unrealistic, and were therefore not reliable. The returns were, in fact, the *potential* returns if there had been no climatic or other limitations on production.

The second study (Donovan & Darroch, 1991) was based on the hypothesis that, *the change in the relationship between the sugarcane yields obtained by growers and the yields obtained by technologists in trials, can be used as a measure of the effective transfer of technology or extension.* This study indicated that the total estimated return on SASEX's RD&E for the whole period 1956 to 1985 and for the three separate decades, could be attributed to extension and research in the following proportions:

Whole period of 30 years	1956/57 - 1985/86	60 : 40
First decade	1956/57 - 1965/66	35 : 65
Second decade	1966/67 - 1975/76	63 : 37
Third decade	1976/77 - 1985/86	83 : 17

In a study to estimate the effects of new technology on productivity in the sugar industry between 1925 and 1986, Donovan & Nieuwoudt (1992) determined that the lag period of the effects of research outcomes on the productivity of the crop was 3 years. The optimum lag periods for various other commodities found in the literature were 5, 6 or 7 years, suggesting that the transfer of technology by extension in the sugar industry is fast and effective.

Another indicator of SASEX extension's effectiveness is the relationship between industrial and technological sugarcane yields. Donovan (1988) found that over the 30 years, 1957/58 - 1986/87, technological yields (in research trials) increased by 9,4% whereas actual yields increased by 36,8%. These data indicate that of the 36,8% increase in growers' yields, 9,4% was due to research and the remainder, 27,4%, was due to extension. The author also noted that in Australia, over the same

30-year period, sugar yields increased by 8,8% which suggests that either extension or research, or both, were less effective than in the South African sugar industry.

CONCLUSIONS AND SUMMARY

There appear to be three very specific rôles for extension:

(I) improving the quality of life of the poor in rural areas which is a social function and therefore a responsibility of the State

(ii) increasing the profitability of agricultural production, a commercial or industrial function for which government should not be expected to fund from the fiscus (especially in view of the magnitude of its other social responsibilities in South Africa which have in the past been neglected)

(iii) protecting the natural resources from bad farming practices.

Conflict is created in public extension because governments and their extensionists have to perform social, regulatory and agricultural development rôles simultaneously. The solution is to separate the functions, allocating them to different extension organisations and agents.

Further conflict arises because there are three identifiable agricultures, each with specific needs and problems. For this to be resolved, separate extension programmes have to be tailor-made to satisfy their individual needs.

The efficiency and effectiveness of public extension is seriously inhibited by:

(I) its institutional separation from research
(ii) its employment conditions being unrelated to the labour market
(iii) having many and diverse stakeholders and missions
(iv) top-down decision making
(v) having to serve political interests as well as transfer technology.

All of these limitations are not factors in Commodity Extension.

Expenditure on commodity extension is of the order of five times greater than that on public extension when expressed as percentages of the value of production, or twenty times more when expressed as expenditure per farmer.

The return on investment in extension follows the pattern of expenditure. For public expenditure, a recent study estimates the internal rate of return on extension as 3%, while in commodity extension studies indicate returns of between 35% and 236%, depending on the period and the commodity.

Future extension in South Africa, and for other countries in the Region, requires specific models for each of the three kinds of agriculture, missioned and structured to suit their different individual needs if optimum benefits are to be achieved from the limited resources available.

For large scale commercial farmers, high-tech research, development and extension (RD&E) must in future be funded largely by the farmers through commodity associations, as illustrated by the SASEX model, or through other commercial affiliations, without significant public funding.

At the other extreme, rural communities who do not aspire to move beyond subsistence agriculture, have a wide range of basic needs, of which agricultural development is not the highest priority. It is politically correct for the Government in the new, democratic South Africa to inject as much as possible into rural development in the tribal areas to improve the quality of life and stability of these previously disadvantaged people. Extension in this situation requires a broad based community development programme with extensionists requiring a basic understanding of food-crop production and animal care, in addition to the more important skills in social development.

The greatest extension challenge in South Africa now, is the development of emerging, small scale commercial farmers, who with limited agricultural land, have the need for a viable livelihood based on farming. If successful, this trend would transform many rural populations and create further potential for job creation, peripheral wealth development and sustainability.

The example of the small scale sugarcane farmers in South Africa illustrates this potential very well. Here the resources of Government field staff have been paired with the specialist research and extension resources of SASEX to develop a strong synergism through a medium term Joint Venture Agreement.

Interesting, carefully prepared extension programmes have been implemented during 1998 based on farmer group activities in order to reach as many farmers as possible. SASEX places great emphasis on the importance of researchers and extensionists working in close co-operation. To this end, the programmes for farmers days, field days and demonstrations are carefully prepared around this principle. The events are attended by groups of between 20 and 200 farmers depending on the programme for the day. The extensionists are carefully trained by the researchers and specialists to ensure presentations are both technically correct and delivered with proficiency, supported with the most appropriate audio/visual aids.

The subject matter for the extension programmes is usually decided through consultation with grower leaders (RD&E Committees are being established for this purpose), to ensure they are topical, appropriate and on-going for each group. Regular feedback from the RD&E Committees is necessary to enable evaluation of the impacts of the programmes on productivity and profitability.

In conclusion, the future relevance and effectiveness of extension in South Africa is for it to be focussed according to the specific three agricultures identified in the paper.

BIBLIOGRAPHY

Eicher, Carl K and Rukuni, M: "Reflections on Agrarian Reform and Capacity Building in South Africa" January 1996. Staff Paper # 96-3, Department of Agricultural Economics, Michigan State University, East Lansing, Michigan

REFERENCES

Anon (1983): Assessment of cost effectiveness exercise of Experiment Station activities. Unpublished report. SA Sugar Association Experiment Station.

Araji AA (1980): Return to public investment in agricultural research and extension in the Western Region. In: Research and Extension productivity in agriculture. University of Idaho, Moscow, Idaho.

Auerbach RMB (1991): The role of agriculture in sustainable development.

Bembridge TJ (1979): Effective agricultural extension. SA Institute of Agricultural Extension (Natal Region) address at Annual General Meeting.

Donovan PA (1986): Management of R&D with particular reference to the SA Sugar Industry Experiment Station. M Ag Mgmt thesis, University of Natal.

Donovan PA (1988): Agricultural commodity extension. Seminar, Department of Agricultural Economics, University of Natal.

Donovan PA (1997): A commentary on agricultural R&D in Southern Africa. Proceedings SA Sugar Technologists Association, Volume 71.

Donovan PA & Darroch MAG (1991): Estimating returns on Agricultural Commodity Extension. *Agricultural Systems*, 37 (1991) 39-53.

Donovan PA & Limwado G (1995): The sources and value of R&D in the Malawian tea industry. Proceedings First Regional Tea Research Seminar, Blantyre, Malawi.

Donovan PA & Nieuwoudt WL (1992): Estimating technology's contribution to productivity in the South African sugar industry. *Agricultural Systems*, 39 (1992) 329-338.

Duvel GH (1986): Resolving the need conflict in agricultural extension. *SA Journal of Agricultural Extension*, 15 (1986) 38.

Law A (1995): Reorientation of research and extension for small farmers: requirements for effective implementation. *Agrekon*, 14, 1, 1-7.

Maunder AH (1972): Agricultural Extension: a reference manual. FAO Rome.

Paarlberg D (1987) How the constitution shaped our agricultural institutions. Our American Land. USDA Yearbook 1987. Washington DC.

Paxton RH & Culverwell R (1988): Implementing an extension strategy. Proceedings SA Sugar Technologists Association 1988, 62, 221-226.

van Zyl J & Thirtle C (1996): Public research, development and agricultural extension as a source of productivity change in South African agriculture. Paper for the National Seminar on Impact Assessment. ARC/SACCAR. Pretoria. 1996.

World Bank (1990): Agricultural Extension: the next step. Washington DC 1990.

Managing Public Sector Extension: Some Critical Issues

by

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1.0 Introduction

In most developing countries agricultural extension is managed by the public sector or the State. The exception exists where there are commodities geared for the export market. In such instances, privately managed extension organisations are engaged. In the last decade, the world economy made a major shift towards free trade. Production, productivity and competitiveness became key words which drove the emerging free market economies. Many extension organisations began questioning their age long mission of improving the quality and standard of living of rural people. With this broad scope and limited resources, extension organisations found themselves not delivering to the many expectations. Governments and funding agencies were also asking questions about level of spending and impact of public sector organisations. This situation was even more acute in countries which had both systems of extension organisation, public and private. In most of those cases private sector extension was delivering greater benefits to improve both quality and standard of living. Why then are private sector extension organisations being able to meet their clientele expectations while public sector extension is failing to meet their goal. This paper will first take a look at extension management and then address some critical issues facing public sector extension organisations in the English speaking Caribbean; and then finally, conclusions will be presented.

2.0 Extension Organisations

Extension organisations like most organisations possess both formal and informal structures designed to carry out tasks in fulfillment of goals. The creation of a structure which ensures that individuals can interact at both formal and informal is a precursor for the achievement of extension's goals. In the formal situation, task oriented management styles are generally utilized; and in the informal setting, relationship oriented styles are preferred. Management styles should therefore reflect the reality of the management situation. Structure and management styles are key factors in the successful achievement of extension's goals.

Extension management (Buford, Bedeian and Lindner, 1995) comprises five functions: (1) planning, (2) organising, (3) staffing and human resource management, (4) leading and influencing, and (5) controlling. In public sector extension organisations in the Caribbean the performance of these functions are done mainly at two managerial levels; top management and middle management. In the execution of these management functions managers of extension organisations perform several tasks. Van Den Ban and Hawkins (1988) described three tasks for the effective operation of extension services. These are:

1. Making decisions regarding goals
2. Management of resources and manpower
3. Overseeing the execution of programmes

2.0 Management of Public Sector Extension

To highlight the critical issues of public sector extension management, the five functions of management will be addressed.

2.1 Planning

Planning as a management function positions an organisation to make the most effective use of its resources and the environment in which it operates. Extension planning in public sector extension organisations, because of it attachment to a wider organisation, should therefore take place within the framework of this wider organisation. Extension organisational objectives must therefore relate to the overall Ministry's plan. In the Caribbean the planning process encounters several problems. Two such outstanding areas are the managerial personnel involved in the planning process and the lack of a clear mission statement.

Managers are generally appointed because of their skills in interpersonal relationship and their ability to conceptualize situations which will put the organisation on a path to success. In the Caribbean public sector extension managers are appointed because of their technical ability or their academic qualifications. In an FAO/UWI survey conducted in three selected territories (Jamaica, Trinidad and Tobago and Grenada) only 5.2 percent of the extension managers reported to have received training in management (Campbell & Rajack, 1988). Little attention is given to conceptual skills. In some cases the managers' training and job experience on the one hand and their academic qualification on the other, are both unrelated to extension. Not only is this a problem in terms of such persons being able to come to grips with extension principles to adequately conceptualize the extension function but also in terms of motivation of staff. This paper is not purporting that someone who is not trained in extension would not be able to carry out the extension planning function but it is erring on the side of caution and actual experiences in the Caribbean which is pointing to this deficiency. In the cases referred to, the general sentiment expressed by front line extension officers is that of a belittlement of their profession. Extension officers air the view that this can only occur in extension, for no where within a Ministry's structure would one find an extension professional heading a department which is not extension related.

In the 70's and 80's it was almost impossible to find extension organisations with mission statements. The Caribbean Agricultural Extension Project addressed this situation in the Organisations of Eastern Caribbean States (OECS). Even where mission statements exist, planning does not reflect the statements. The problem here is the lack of autonomy of extension programmes. In the Caribbean, public sector extension planning is an output of the Ministry's overall planning and not an integral part of the overall planning of the Ministry. For instance, a Ministry, without consultation with extension, will decide to grow onions and request of extension to plan for its production. Onion now becomes part of the overall planned activities of extension. If however extension was given the autonomy to consider onion production in its programme a different result may be obtained because of factors which extension will normally consider in its planning process; for instance, willingness of farmers to grow onions, availability of land.

Public sector extension plans reflect a lack of understanding of the extension environment. The lack of clientele involvement in the planning process is evident. There is generally a sentiment among other units within the Ministry,s structure that the needs of farmers are well known and that there is no need to consult with farmers in the development of programmes. This sentiment has now infiltrated the ranks of extension. For instance, at a recently conducted Participatory Rural Assessment in St. Lucia (Campbell, 1998) extension officers were reluctant to participate because they felt that the exercise was a waste of time.

The planning function is key to all the other management functions. It carries a certain kind of primacy (Buford, Bedeian and Linder, 1995). In the Caribbean, public sector extension planning is generally done by persons lacking the conceptual skills to position the organisation to make the most effective use of its resources and its environment; as such, the other functions of management are usually adversely affected.

2.2 Organising

Public sector extension organisations in the Caribbean usually have flat structures, consisting of a top level manager, the head of extension; middle level managers, the regional or district heads, and the front line officers. The structure is generally a reflection of the small size of the countries. Such structures allow for easy communication between the different levels; however, in public sector extension organisations in the Caribbean the distance is amplified by the physical isolation of the offices and the officers in their respective work area. In recent times, efforts are being made to remove this isolation through the upgrading of the offices and office facilities; for instance, the installation of telephone lines and computers.

In the Caribbean also, there is generally a lack of appreciation of the authority which goes with extension managers. This generally comes because of two factors: the lack of recognition of extension as a profession and the general inexperience of the managers themselves. What flows out of this situation is an extension manager with little power or no capacity to influence. This weakening of the capacity to influence impacts negatively on the authority of managers resulting in a weak overall extension structure. In an extension organisation, the authority of the managers hold the structure together; and since this authority is lacking in Caribbean public sector extension organisations, most structures are weak.

In fact, the overall performance of public sector extension organisations can be tied to the question of extension authority. Managers in a situation where authority is undermined or weakened generally tend to renege on their responsibility and accountability. In the Caribbean, there is a general lack of responsibility and accountability among extension managers.

Extension by its very nature depends on a source or sources of information. Extension structures should be so designed to allow for coordination or easy access to resources both within the broader framework of the Ministry and beyond. Structures should allow for interaction, because the organisation is not just a formal structure, it consists of people, a social system. (Albrecht et al. 1989). Public sector extension organisations in the Caribbean tend to operate as islands. Poor structural linkages with other units is the norm and there are few mechanisms in place to access the other resources that are outside its structure. There is also need for extension organisations to maximize the human resource potential within its own structure.

2.3 Staffing

Once a structure is in place and the organisational objectives are known, then management should put in place a mechanism for the hiring of staff. In public sector organisations, extension managers have little to do with the process of hiring or even firing. In the Caribbean, hiring falls under the pervue of the Public Service Commission, an organisation which constitutionally falls outside the control of government, but in practice is greatly influenced by it. The Commission hires based on a job description handed to it. In general, extension managers do not have a say in the writing of job descriptions to fit the type of personnel most needed for staff within the extension structure.

Then again, persons enter extension through the ‘back door’. Such persons are hired as temporary staff without the necessary qualifications to enter the system; work for a few years, and then get hired. Although a mechanism of probation is in place, most public sector extension organisations do not use the mechanism. There is generally no assessment of the extension trainee to ascertain his or her suitability to the system. In response to this limitation an orientation programme was developed (Campbell & Saska 1994). To date not much use is made of the programme. Over the years such persons were not able to benefit from training because of their lack of qualification, and their ability to move through the system was severely limited. Where such situation occurs, conflict between the extension managers and such persons are very common. This creates a demotivating effect which is sometimes filtered through to other persons within the extension system, which finally leads to poor staff performance.

There is also the ability of public sector extension organisations to prepare itself for the future. The fact that extension planning is usually done by persons with limited knowledge of extension, the development of futuristic plans or strategic plans do not always occur. Structures, with the necessary staff are not put in place to position extension to take advantage of the changing environment. For instance, globalization and its effect were talked about in several fora, the need to have farmers adopt a business approach to farming was also well discussed; however, most extension organisations did not see the need to employ persons with farm business orientation to strengthen their staff or to put in place structures to have staff gain experiences in farm business management.

2.4 Leading and Influencing

Public sector extension managers because of their training and orientation are not adequately prepared to be good leaders. However, some have managed to learn on the job and have used their experience and seniority to establish the necessary authority to gain respect. In the OECS older heads of extension commanded greater respect and were able to hold the extension staff together. Their departure left a vacuum. The younger managers although more qualified were unable command the same respect. They did not devote enough time to the social needs of their staff.

Extension managers are also limited in the types of support they can give to their staff to satisfy their needs. Campbell (1992) in working with extension staff of the Ministry of Agriculture in Belize found that the number one need was training. Public sector extension managers do not have full control over who receives training and what type of training their staff receive. In fact, this is one area in which the authority of extension managers is undermined. It is not uncommon for the managers to learn through indirect sources of their staff being awarded scholarships to go on training courses.

2.5 Controlling

In extension management, controlling refers to the monitoring and measuring of accomplishment. In public sector extension organisations this is a major area of concern. Extension managers and staff are not generally accountable for the results of their efforts. Their positions are protected by their tenure in the government service.

In the 1980's the Caribbean Agricultural Extension Project attempted to introduce performance development conferencing among extension organisations in the OECS. Its introduction was met with partial success. Some extension managers resisted the effort. The process brought out several areas of weaknesses in extension managers and some managers were not prepared to make the adjustment.

3.0 Conclusion

Public sector extension is now at crossroads. It has to deliver to stay alive. Governments are now questioning and reviewing the operations and management of extension services. They are exploring options. Some are actively pursuing the privatization model. There is therefore urgent need for extension to show impact. In the development of its objectives and programmes public sector extension needs to take on board new strategies to actively involve its clientele. In keeping with this new thought extension organisations must be more transparent and as such more accountable.

The need to reach out and be more collaborative is also apparent. Extension organisations cannot exist by themselves but in association with others. Their structures and functions must reflect this reality. At the same time restructuring and retooling within public sector extension should not be unique to extension. Other units within Ministries should also undergo changes.

Extension managers must now truly take on the role of managers and cease to challenge their subordinates in terms of their technical skill. They ought to pay much more attention to their functions as managers.

Reference

1. **Albrecht H. et al. : *Agricultural Extension, Volume 1 Basic Concepts and Methods*. Rural Development Series, GTZ, Eschborn,1989**

2. **Buford, James A., Bedeian A.G., & Lindner J.R. : *Management in Extension*; Ohio State University Extension, Columbus, Ohio, USA, 1995**

3. **Campbell, D. & Saska, G. : *Caribbean Agricultural Extension: A Supervisory Manual;* University of the West Indies, St. Augustine, Trinidad, 1994**

4. **Campbell, D. & Rajack, A. : *UWI/FAO Survey on the Organisation and Management of Agricultural Services for Small Farmers in the Caribbean*; University of the West Indies, St. Augustine, Trinidad, 1998**

5. **Campbell, D. : *Report on the Organisation and Management of the Extension Services of Belize in the Post CAEP Period 1985 - 1992*; University of the West Indies, St. Augustine, 1992.**

6. **Van den Ban, A.W. & Hawkins, H.S. : *Agricultural Extension*; Longman Scientific and Technical, 1985**

STRATEGIC PLANNING FOR ACCOUNTABILITY: IMPLICATIONS FOR INTERNATIONAL PROGRAMS

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Abstract

This presentation demonstrates the application of a twelve-step strategic planning model using a systems approach to design and implement an accountability system for the North Carolina Cooperative Extension Service (NCCES). A case example is provided that illustrates the use of the model in developing one component of the accountability system.

Introduction

The need for accountability in Agricultural and Extension Education programs is becoming a matter of wide global concern. For example, in May of 1998, the theme for the 32nd conference of the South African Society for Agricultural Extension was "Accountability in Extension and Rural Development." Also in May, a conference focusing on evaluation and accountability was held at the University of Melbourne, Australia. This paper was presented by the author at both of these international conferences. It has been updated and revised to include implications for international programs in Agricultural and Extension Education.

In the NCCES, the search for a successful accountability model has utilized an interdisciplinary approach combining the disciplines and practices of research, evaluation, education and marketing within the frameworks of strategic planning and systems thinking. The systems approach offers an interesting paradox by examining the big picture, yet not overlooking the need to collect detailed concrete information on program impact. By planning strategically, extension leaders ensure that critically important matters receive attention and that extensionists in the field do not get lost in the trivia of useless information. A systems approach and strategic planning within this 12-step framework enable extension planners to be visionary in designing a system that is futuristic in its orientation. However, continuous feedback from stakeholders keeps the accountability system both practical and firmly grounded in the current reality. With a customer-driven focus, the model requires continuing environmental scanning and analysis. Other steps involve assessment and acquisition of resources needed to design and implement the accountability system and the constant auditing of the processes critical to making the system work. An overarching theme of involving customers and stakeholders in developing and implementing the accountability system ensures that understanding and ownership of both the system and its products are pervasive throughout the extension organization and those it serves. Increased teamwork and commitment have been positive results of this process.

The Strategic Planning Process

NCCES has been engaged in long-range planning for much of its existence, but strategic planning differs in several respects. Long-range planning operates within the paradigm that the organization will remain relatively stable. The assumption is made that the mission, goals and objectives of the organization will not undergo drastic changes. Strategic planning assumes a changing environment and an organization that must change and adapt to survive and prosper. In strategic planning, the mission or purpose of the organization is often redefined and a new vision developed that defines a preferred future much different from the status quo. New goals are often included in a strategic plan that reflect a new direction. Goals are translated into action by objectives and action plans that move the organization from where it is to where it wants to be. As the action plans are implemented, feedback mechanisms and reality checks enable leaders to constantly review and adjust elements of the strategic plan. The systems approach and the future-oriented aspects of strategic planning are extremely useful in a rapidly changing global society (Finch and Crunkilton, 1993: 44-45).

A Systems Approach

Systems thinking and systems approaches to planning as proposed by Peter Senge and others (1990, 1994) provide ways for extension leaders to break out of old patterns of decision making. The systems approach continuously strives to keep planners looking at the big picture as well as the key variables and components within the system.

Foremost in the systems approach is the acceptance that organizations such as the NCCES must be viewed as a system. For example, North Carolina's extension system is made up of 100 county extension centers and one center on the Cherokee Indian Reservation. Also, the system includes the faculties of two universities, N.C. State University and N.C. A&T State University. Within each university, there are additional system elements (such as the 20 departments with extension faculty at N.C. State). Other examples of structural elements are two regional research and extension centers, one in the western part of the state and one in eastern North Carolina. These structural units are staffed by approximately 800 field faculty or local extensionists and more than 200 university-based extensionists. Hundreds of paid support staff and almost 20,000 volunteers are included in this complex system. Thus, it becomes apparent that in North Carolina, extension exists as a complex system throughout the state with thousands of employees and volunteers performing hundreds of roles and functions.

The appropriateness of a systems approach is also apparent. In a systems approach, extensionists are continuously reminded to look beyond the single event or the single decision upon which they are working. It requires that they look at patterns of behavior and ultimately to look at the entire system as a whole. Systems thinking is founded upon a principle that when a decision is made or a change occurs, it has consequences throughout the system. Some of the consequences will be obvious, while others will be difficult to discern, but may have high impact on the organization. Some of these consequences will be immediate, but others will occur over a longer period of time.

The Strategic Planning Model

The 12-step process described in the following pages is customer and stakeholder driven. Customers, defined as the ultimate consumers or users of extension educational programs, are kept at the center of planning processes in the NCCES. They are involved by providing critical information on their needs for specific programs and on critical issues that are impacting the quality of their lives. Customers are also involved as they provide feedback on the usefulness and quality of the educational programs in which they participate.

Stakeholders are defined as individuals or groups who can impact extension or who are impacted by extension. Stakeholders include customers, legislative decision makers and community leaders as well as individuals and groups who work in partnerships and coalitions with extension in developing and delivering programs. In North Carolina, the Advisory Leadership System provides a structured way for thousands of extension customers and other stakeholders to be involved in shaping and using its accountability system.

Although this model is presented as a linear step-by-step model, it is important to note that the steps do not necessarily occur in the order given. Rather, it is more useful to think of these 12 steps as sub- processes that are all vital to the success of the model. Steps, or sub-processes, may take place out of sequence or several may occur at the same time. This strategic planning model, if implemented effectively, should be thought of as iterative, with steps or sub-processes being repeated as conditions inside and outside the organization change. Thus, the strategic planing model and the products of the model are dynamic, continuously changing and adjusting as conditions warrant. The model presented here is an eclectic, interdisciplinary model drawn from myriad literature on strategic planning and from the practice and analysis of the author and his colleagues in a wide variety of educational, health service and corporate environments. The 12 steps are:

Step 1. Environmental Analysis

This process involves a thorough assessment of customer and stakeholder needs and issues. First, customers and stakeholders are identified. This is followed by a prioritization of the customers and stakeholders in terms of their significance to the survival and general well-being of the organization. Environmental analysis requires collecting and analyzing data on internal forces impacting the organization, such as employee morale; and external forces, such as budget reduction and cuts in government spending. The critical questions addressed in this important process are: 1) Who are our customers and stakeholders?, 2) What are their major needs and issues?, 3) What are their expectations of our organization?, 4) What internal and external forces and trends impact us now?, 5) What are the anticipated forces and trends?, and 6) How will these forces and trends impact us?

Step 2. Critical Process Audit

The organizational behaviors, processes and procedures relevant to accountability must be carefully assessed. The critical process audit is designed to analyze their effectiveness and impact. Although the implementation of this planning step is complex, the questions for which answers are sought are relatively simple. They are: 1) What are the processes being implemented that are most relevant and most critical to accountability?, 2) Which of these processes work well?, 3) Which of these processes are not working as well?, 4) How can we build on our strengths to improve accountability?, and 5) How can we remove barriers that are the basis of our weaknesses?

Step 3. Current Resource Inventory

The emphasis at this stage is taking stock of the resources available to address the issue of accountability. The questions to be answered are: 1) What human resources, such as knowledge and skills, are available to us in developing an accountability system?, 2) What financial resources can we readily access?, and 3) What technology is available and relevant to the development and implementation of an accountability system?

Step 4. Values Clarification

The importance of this step cannot be overemphasized. Yet the assessment of values is a step that might readily be set aside by some planners. The experience of this author, however, has indicated that identification and validation of values is extremely important. Research shows that people and organizations act out of their values. An accountability system that is not in accord with the value system of the organization is doomed to failure before it starts. The questions here are: 1) What are our core values and beliefs?, 2) How do we rank these values in terms of the end results we want?, and 3) How do we rank these core values in terms of what we have to do to be successful in life and in our jobs as extensionists?

Step 5. Mission Definition

To be useful, a mission statement must be a clear and effective tool for communicating the central purpose of a group or organization. The statement should be brief, simple and easy to understand. It should identify the intentions of the group toward co-workers, customers, administrators, partners and stakeholders. The mission statement serves as a management tool that establishes the broad direction of the group. It serves as a screen or filter for making decisions, reminding the group of what it will and will not do. Two questions that must be answered are, "Why do we exist?" and "What is our reason for being?"

The group must reach a consensus on its mission or purpose statements even though it may be challenging for the group. Without a consensus, the group will flounder and little progress can be made. After the mission statement is determined, group leaders should use it frequently to keep the group on course and progressively moving ahead.

With the completion of steps one through five, a comprehensive situational analysis has been completed. The critical question answered is, "What is our existing situation?"

Step 6. Vision Building

After the group has examined the existing situation and reached consensus on its mission, the next critical sub-process is vision building. The challenge at this stage is to answer the question, "What could be?"

A vision statement can be a powerful tool for bringing about positive change in a group or organization. The vision must communicate what the group sees as the ideal outcome of its efforts. It is a shared expression by the group of what it truly wants to create. Visioning comes from a belief that people have the right and responsibility to create situations in their future that reflect their own values and aspirations. Visioning is undertaken with the philosophy that people can actuate what they can vision. A vision statement should be viewed as a living document with continual renewal as people and environmental conditions change. An effective vision statement has the quality of being exciting, motivating and compelling. It must generate ownership and movement toward the desired new situation.

Visioning the development of an accountability system for Extension is an inexact but crucial component of the strategic planning process. Clear and powerful words should be used to evoke images of a worthwhile accountability system. The vision of the system to be developed must be a stretch from the current reality, but it must not be an impossible dream. People must be reasonably confident that with effort and struggle they can develop what they have visioned.

Step 7. Goal Development

When the vision is clearly stated as the answer to, "What could be?" and other steps have answered the question, "What is?" the next sub process is goal setting. Goal setting answers the question, "How do we move from what is to what could be?" Goals may best be viewed as a set of major steps that bridge the gap between the current situation and the vision. The experience of the author and his colleagues in a wide variety of strategic planning situations indicates that a reasonable number of goals for most endeavors are three to seven. If there are fewer than three, the goals are usually too broad and abstract to be meaningful. If there are more than seven, they are cumbersome to manage and difficult to remember. They must relate to the vision and should be in congruence with the mission and core values of the group. Goals are abstract and not easily measured, but are definitive enough to give direction.

The words used in stating a goal should be strong and action-oriented. The collection of goals must be written so that when achieved, the vision will be realized.

Step 8. Developing Action Plans

Abstract goals must be translated into concrete action plans. These plans must be detailed as a sequence of specific steps that when completed contribute to achievement of the goal.

A logical way to move from goals to action plans is to develop a set of objectives for each goal. Objectives differ from goals in that they are written at a higher level of specificity and concreteness. A good rule to follow is to write objectives that are measurable. At least two objectives should be written for each goal; the recommended upper limit on the number of goals is five. If more than five objectives are needed to translate a goal into action, the goal may be too broad and should be rewritten.

Next, specific action steps are written for each objective. Included with the action steps are answers to questions: What is to be done? How will it be done? And who will do it? A time frame is essential at this stage that indicates a starting date and a completion date for the action. It is recommended that the resources needed to carry out the action be identified in the action plans. These may include financial resources, human resources, partnerships with other groups and organizations, and additional research that might be needed.

Step 9. Feedback System Design

As action plans are developed, it is critical that the specific outcomes expected as a result of the actions are specified. By specifying outcomes, the measurement of objectives becomes feasible. Measurable objectives provide feedback to extension leaders that enable them to monitor progress. Provision for the constant collection and analysis of data is central to the utility of the feedback system. The systems approach of this strategic planning model requires that great emphasis be placed on development of an effective feedback system.

Step 10. Reality Check

It is easy to become entranced by the enthusiasm of a group working on a strategic plan. At times groups move too far to the edge of optimism and create strategic visions or goals that are not realistic. If unrealistic assumptions are made about the availability of resources, the implementation of plans can be stopped far short of completion. The author recommends that reality checks be applied as objectives are set and action plans developed. A reality check calls for questions such as, "Are our plans feasible?" and, "Are resources accessible that are needed to do the job?" Groups must assess their work to determine if they have set a vision beyond their reach or if important goals have been omitted. Reality checks are not meant to pour negativity on the fire of a visionary plan. They are simply a way to keep excessive optimism in balance with what is possible.

Step 11. Marketing the Plan

Developing an extension accountability system with a sound strategic planning process can result in an excellent written plan. However, a plan is worthless unless the members of the extension organizations buy into the plan and take ownership of it. A well thought-out promotion and marketing strategy can help make sure that people throughout the organization understand the plan. It is this writer's contention that the best internal marketing strategy is involvement of customers and stakeholders in the planning process.

Involving customers, stakeholders and extension employees at all levels will foster understanding, ownership and commitment. The involvement principles used throughout this strategic planning model may be summarized as *IOU = Commitment.* Involvement facilitates ownership and understanding, which in turn results in commitment to implement the plan.

Step 12. Implementing, Monitoring, Adjusting

If the principles and processes inherent in this systematic model are utilized in the development of an extension accountability system, implementation will begin with optimism. Extension leaders must continuously articulate the plan and the benefits that will come from its successful implementation. They must help extensionists see themselves gaining from the accountability plan. Most important, extension leaders must hold themselves and others responsible for accountability. The implementation of any accountability system will require monitoring. No matter how well the system was developed, it will require adjustments as it is activated and as conditions change internally and externally to the extension organization.

A Case Example

This case example is provided to illustrate the application of the 12-step strategic planning model in developing one component of the Extension Reporting System (ERS), the accountability system of NCCES. The use of selected steps will be described along with examples of the results or data collected. The process was used by the Targeting Marketing Task Force of NCCES in 1997. The task force worked to identify key audiences or stakeholders to receive accountability information (NCCES, 1997, Extension Targeting Marketing for Accountability information task force preliminary report: 1-12).

Step 1. Environmental Analysis

Question: Who are the primary customers or stakeholders for accountability information?
Results: Thirteen primary stakeholders were identified including state legislators, county administrators, the news media and federal legislators.

Question: What are trends and issues (forces) affecting the marketing of program impacts?
Results: Urbanizing of the N.C. legislature, changing customer expectations, competition from other agencies, technological advances, etc.

Question: What are the needs and expectations of our primary customers for accountability information?
Results: Credible evidence, dollar impacts, cost-benefit information, people impacts, etc.

Step 2. Critical Process Audit

Question: What is working well in getting accountability information to stakeholders?
Result: Maintaining visibility with county leaders, personal contact with officials, legislative tours, etc.

Question: What is working less well?
Results: Knowledge of stakeholders' preferred methods for receiving information, lack of organized communication strategy, coordination of marketing efforts, etc.

Step 5. Mission Definition

Question: Why does the Targeting Marketing Task Force exist?
Results: Mission Statement: The mission of the targeted marketing effort is to provide the right accountability information to the right people at the right time in the right format.

Step 6. Vision Building

Question: What are the characteristics of an ideal impact marketing program one to three years from now?

Results: Audiences get information they need in the manner they want in a timely fashion; communication resources are directed to the highest priority marketing needs; agents write valid success stories; cost-benefit analysis data show favorable return on investment...

Step 7. Goal Development

Question: What goals must be achieved in the years ahead to move from our current reality to our vision?

Results:
(1) The right people will be advocates and knowledgeable of NCCES impacts.
(2) Relevant, high-quality program information is provided in a way that gets noticed.
(3) NCCES is a recognized problem-solving organization with identifiable accomplishments.
(4) NCCES has a thorough, targeted marketing plan operating with adequate human and material resources.
(5) Organizational support from major stakeholders is enhanced.

Step 8. Developing Action Plans

These five goals are being implemented by using an action plan that delineates the action to be taken, the method or format to be utilized, the time frame for completion, the evidence of success and the person(s) or unit(s) responsible for ensuring that the action recommended occurs.

Other Steps

Extension leaders continue to monitor the development and implementation of this and other components of the total accountability system. Reality checks are used to obtain reactions from extensionists and stakeholders such as legislators and county officials. The NCCES Accountability System, ERS, is a dynamic work in progress. Changes and adjustments are made as the organizational environment and stakeholder needs and expectations change. The system has been marketed through involvement of extension faculty and other stakeholders in the development and implementation of the system. Also, it has been marketed using internal and external communication channels such as videotapes, newsletters and the Internet.

Summary

The strategic planning process described in this paper is interdisciplinary with emphasis on a systems approach. The flexibility, comprehensiveness and utility of the process allow it to be used at many levels of an organization. It can be used to develop a strategic plan for all aspects of the entire organization, to devise an accountability system or just to develop one component of an accountability system. The model is presented as a logical 12-step process, but steps may be omitted, implemented simultaneously or occur out of sequence.

To develop a successful accountability system, Extension leaders should ensure the involvement of employees and stakeholders throughout the organization. This requires time and other resources, but in the end, it is worth the effort. For the accountability plan to become a reality, it must belong to the people in the organization and to its customers and stakeholders. A strategically developed accountability system will be comprehensive in scope and will set priorities for organizational direction and energy. A successful accountability system will be an evolving system that keeps key decision makers aware of positive impacts. It will be a system that gets the right information on program impacts to the right people in the right format at the right time.

Implications for International Programs

The author offers the following implications for consideration by Agricultural and Extension Educators responsible for international programs: 1) The system, structure, processes and context may vary from country to country, but systems thinking and the strategic planning process are applicable for developing an accountability system in any country, 2) Barriers to strategic planning, systems approaches and participatory methodologies may differ from culture to culture, 3) Participatory planning offers universal application and benefits, but the values, norms and other cultural factors may impact the extent to which participation is valued in a culture, and 4) The strategic planning process reported in this paper has utility for planning and for organizational development in a variety of contexts and cultures.

References

CHAWLA, S., and RENESCH, J. (eds.), 1995. Learning Organizations. *Portland: Production Press.*

DALGAARD, K. A., BRAZZEL, M., LILES, R. T., SANDERSON, D., and TAYLOR-POWELL, E. 1988. Issues Programming in Extension. *St. Paul: Minnesota Extension Service.*

FINCH, C. R. and CRUNKILTON, J. R., 1993. Curriculum Development in Vocational and Technical Education: Planning, Content and Implementation. *Boston: Allyn and Bacon.*

MERSON, J. C. & QUALES, R. L., 1979. *Strategic Planning for Colleges and Universities: A Systems Approach to Planning and Resource Allocation.* San Antonio: Trinity University Press.

NANUS, B., 1992. *Visionary Leadership.* San Francisco: Jossey-Bass.

NCCES, 1997. Extension targeting marketing for accountability information task force preliminary report; 1-2. *Raleigh: North Carolina Cooperative Extension Service.*

SENGE, P. M., 1990. *The Fifth Discipline.* New York: Doubleday.

SENGE, P. M., KLEINER, A., ROBERTS, C., ROSS, R. B., and SMITH, B. J., 1994. *The Fifth Discipline Fieldbook.* New York: Doubleday.

LILES, R.T., 1997. Strategic Planning for Accountability: Implications for International Programs. Proceedings of the 32nd Conference of the South African Society for Agricultural Extension.

Session F Extension Reform

March 23, 9:00 - 11:00 a. m.

Session Chair - Burt Swanson

Location: Cascade Room

TITLE: Reforms in the Provision of Agricultural Extension Services in Uganda: Effects on Clients' Access and their Livelihoods
AUTHOR: Paul Kibwika, Abigail Mulhall, Chris Garforth
Makerere University, Kampala, Uganda
DISCUSSANT: Gustav Duvel

TITLE: Global Differences in the Reform of Agricultural Extension: Confronting the New Paradigm
AUTHOR: William McLeod Rivera
University of Maryland
DISCUSSANT: Gustav Duvel

TITLE: Transforming Linkages in Research and Extension to Serve Farmer Needs in West Africa For the Next Century
AUTHOR: Remileku Rakey Cole, Mustapha M. Ceesay
Cornell University
DISCUSSANT: Terry Tucker

TITLE: Updating Extension's Farm Demonstration Model: The Value of an On-Farm Research Trial for Dairy Producers
AUTHOR: Joseph L. Donaldson, Edgar P. Yoder
University of TN and Pennsylvania State University
DISCUSSANT: Terry Tucker

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Reforms in the provision of agricultural extension services in Uganda: Effects on clients' access and their livelihoods

Paul Kibwika[1]
Abigail Mulhall[2]
Chris Garforth[2]

Abstract

Over the past decade, many countries have implemented major reforms that affect the provision (financing and delivery) of agricultural extension services. Prior to this, the goal of extension was concerned with the efficiency and effectiveness of service delivery and financing. Now it must encompass other, more complex goals of sustainability, equity and empowerment, and be seen also as a tool for rural development. The current and international debate about the future provision of agricultural extension services has raised questions about the equity effects of the reforms. Will the new arrangements for extension provision affect rural peoples' access to extension services? In particular, which categories of household will be affected, and what is the likely impact of a change in access to extension on their livelihoods? The paper addresses these questions using evidence from empirical research, which examines the equity effects of recent reforms on rural peoples' access to extension services. Research was conducted in five countries and this paper presents the case from Uganda, an East African country that has recently experienced a number of reforms to agricultural extension, namely decentralisation, privatisation reforms and the unification of extension services. Initial results indicate a need for a pluralistic extension service, targeting of extension services to defined categories of users and more general awareness about extension's role and contribution to the development process.

Introduction: reforms in the provision of agricultural extension services

In the past decade considerable attention has been paid to the provision (financing and delivery) of agricultural extension services, primarily because of the high recurrent costs they entail. Many countries have invested heavily in providing agricultural extension services, which until quite recently were funded and managed almost entirely by the public sector. In developing countries the public sector extension service was largely supported by the World Bank through projects which introduced the Training and Visit (T&V) system of extension. Currently the Bank supports a number of countries implementing a 'modified T&V' system of extension (e.g. Uganda, Ghana, Nepal and Sri Lanka). During the 1980s public sector extension was severely criticised for being irrelevant, for its poor impact, ineffectiveness , inefficiency and, sometimes, for not pursuing programmes that foster equity (Rivera, 1990). Recent reforms in the provision of extension services in developing countries have addressed issues of efficiency and effectiveness, but there is concern that these reforms (such as decentralisation in Colombia and the Philippines and privatisation in Mexico) have led to little improvement in, or in some cases may have reduced, access by resource poor and disadvantaged households to agricultural extension services and consequently to sustainable livelihoods (Carney, 1998; Rivera, 1998)

Changes in extension thinking

To date there has been a necessary and dramatic change in extension thinking, from 'technology-transfer' to demand driven 'participatory' approaches that intend to empower farmers and value their indigenous knowledge. The technology-transfer approach is associated with governments' objectives of immediate food production, which risks promoting growth without equity; in the long-term, through failing to recognise the needs of all farmers, the result may be a small proportion of very productive commercial farmers, with the vast majority left behind at the subsistence level (Swanson et al, 1990). A primary task of agricultural extension ideally, should allow all farmers access to, and use of, relevant information, which in turn contributes to enhancement of their economic and social situation. This may create a conflict of interests when attempting to meet economic goals of efficiency and effectiveness and social goals of equity, sustainability and empowerment. This paper attempts to highlight the issues that surround farmers' access to extension services, and the implications of changes in the arrangements for the financing and delivery of extension on their access to extension services.

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Methodology: an investigation of equity effects of reforms

The research was conducted in two parts. First, a review of primary and secondary data examined the type of reforms that have taken place in Uganda and included identification of all agricultural extension service providers in the country. Second, hypotheses were drawn about the likely effects of reforms on access to extension, and semi-structured interviews and group discussions were developed to answer each hypothesis. Nearly 200 farmers were interviewed with equal representation in the sample by gender and wealth. The fieldwork was undertaken in two different geographical areas (variable by agro-ecology) and in two parishes in each area (variable by the type of service provider).

Uganda: a background

It is estimated that 90 percent of the population of Uganda live in rural areas and are dependent on agriculture for their livelihoods (MPED/World Bank, 1995). In 1996 agriculture represented about 49 percent of national gross domestic product (MAAIF, 1996) and the majority of agricultural activities were carried out by an estimated 2.5 million farm households who own on average less than two hectares of land (MAAIF, 1996). Uganda gained independence in 1962, which was followed by a period of dictatorship from 1971 until 1986. After this period the country underwent a series of national reforms including structural adjustment (the streamlining of government services and the reduction of government expenditures), decentralisation in 1993 (with responsibility for the planning and implementation of rural development programmes devolved to the district level), and liberalisation/privatisation (with the promotion of private sector involvement in agriculture, e.g. in the provision of agricultural inputs and marketing) gradually introduced since 1993. Current emphasis is placed on 'the modernisation of agriculture' as a means to alleviate poverty and improve living standards in Uganda (MAAIF, 1996).

Reforms in the provision of agricultural extension services

After independence extension services were focused on progressive farmers. The aim was to encourage commercialisation of agriculture and consequently during this period extension became merely a public agency for selling agricultural inputs. The 1980s were seen as a period of economic recovery. For the public extension service this meant a large grant from the World Bank to be used following certain recommendations specified by the Bank, which included the establishment of the present Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and the National Agricultural Research Organisation (NARO) The formation of MAAIF involved the merger of several government ministries and departments and a reduction in the number of civil servants. In 1993 MAAIF adopted an extension approach, supported by the World Bank and based on modifications to the T&V system of extension. The modified system, known as the Agricultural Extension Project (AEP 1993-98) operates in 27 districts and differs from the previous T&V system through: a unified approach to extension provision; a single line of command; a focus on farmers' groups; concentration of efforts on selected enterprises and messages; strengthening the linkages between farmers, research, extension and marketing agencies. The AEP was adopted within a period of several national reforms that affected extension, such as the re-unification of government ministries into MAAIF, the retrenchment of civil service staff, privatisation, and decentralisation. Under the latter reform, Local Councils (LCs) are expected to identify local problems and possible solutions and initiate programmes for the provision of municipal services. MAAIF still sets policies and plans, allocates finances (from projects) and monitors performance of the agricultural sector, but the LCs are now involved in designing local programmes. NGOs became involved in extension services in the 1980s, as a result of the failure of the public sector to reach many of the poorer, socially and economically disadvantaged farmers. Recently, many NGOs have started to depend on government extension staff to deliver extension services to their clients. The government has also started to use NGOs as intermediaries in the delivery of social services to rural communities.

Private companies provide extension services to farmers who produce and sell a specific commodity, such as tobacco, sugar and tea, to the company. Farmers receive inputs, credit, marketing and extension services and indirectly 'pay' for these when they sell their produce. Due to national policy reforms, activity in the private sector has increased and some companies have now started contract grower schemes for non-traditional cash crops, such as maize and beans. As part of the national policy of liberalisation, public agencies have been relieved of the responsibility of input supply and produce marketing through privatisation of the sector. Other service providers in Uganda include, farmers' associations, such as the Uganda National Farmers Association (UNFA) and the Uganda Commercial Farmers Association (UCFA). UNFA provides a 'demand-driven' service where about 20% of the real costs of providing a service are recovered through charging fees to farmers.

Equity implications of extension reforms

Three major reforms have taken place in Uganda that are likely to affect clients' access to extension services. These are the unification of agricultural extension services, decentralisation and privatisation.

Decentralisation is a national policy that has implications for both the financing and delivery of agricultural extension services. Control and responsibility for the delivery of extension services is devolved to the district where a constraint in funding at this level implies reduced funding in the provision of agricultural extension services. Although this policy intended to improve service provision through decentralised planning, implementation and prioritisation of programmes and the supervision of activities at local level, large reductions in staff may have effected the efficient functioning of this policy. Further, the retrenchment of vast numbers of field level staff and a change in the staffing structure from that recommended by MAAIF, are likely to have reduced farmers access to the public sector extension service. The merging of ministries (Agriculture, Animal Industries, Fisheries) into MAAIF subsequently resulted in the unification of extension services through the AEP. This policy intended to improve the efficiency of the service through delivering all extension messages through a single field extension worker (FEW). Along with this reform, delivery through farmer groups was emphasised, although this may prevent some farmers from accessing the service overall there should be increased coverage of the service. The unified approach can only operate effectively if staff receive regular training in the areas in which they are not specialised; financial constraints prevent this. Inadequate training of staff has implications for the quality of the service delivered. In an effort to reduce the governments inefficiency in the provision of some extension services, the input supply and produce marketing sectors were privatised. This should give farmers access to a competitive market and reduce their reliance on the public sector service but it may have negative effects for resource-poor households who are likely to have less access to some improved inputs and technologies.

Research Findings

The public service reforms

Access to extension services was determined according to farmers' contacts with different extension service providers. These were identified as NGOs, Community Based Organisations (CBOs), public sector extension (under MAAIF), other farmers, private input dealers and radio. The public sector is the largest extension provider and is also mandated by government to provide services to all farmers. Recent reforms have, to a large extent, affected the public extension service. The reforms, which aimed at increasing efficiency in government departments and reducing government expenditure, resulted in a considerable reduction in the number of extension staff. Earlier it was envisaged that this reform would disadvantage the resource poor in their access to extension services. The findings, however, proved to the contrary. Resource poor farmers were found to have more or less equal access to the public extension services as compared to the resource rich farmers. Resource poor female farmers were most disadvantaged with only 39% reporting access to extension services, compared to 50% of the resource rich females, and 62% and 44% of poor and rich males respectively. Overall, only 15% of the extension agents interviewed thought that the resource poor were disadvantaged, although they did not desegregate male from female farmers. Despite a deliberate policy effort by MAAIF to target the resource poor in an attempt to alleviate poverty, it still does not have a working definition of what it means by resource poor and resource rich farmers. Nearly 50% of the farmers interviewed, however, said they had access to the public sector services. With privatisation and liberalisation, responsibility for input distribution has moved from the public to the private sector. Now the main role of the public sector is information delivery, but few farmers are aware of this change. Many farmers thought it was not worth seeking information they could not use, due to a lack of necessary inputs that were previously delivered alongside the information. The extension staff confirmed farmers' persistent demand for inputs, and thought that a lack of inputs was a major limitation to farmer utilisation of agricultural information, which in turn reduced farmers contact with the extension providers. As one FEW commented 'if a farmer cannot afford improved seed, how can I help them to use it?'. With the exception of one case, farmers in all the parishes studied, stated that 'other farmers' were the most common source of agricultural information and advice.

The public sector extension service intends to have national coverage, whilst other providers have limited coverage. Farmers in the areas in which NGO services dominate (Gwaragwara and Sanje) have more access to extension services that those with limited access to NGO services (Busibira and Kalungi). The prominence of NGO services in certain areas can be attributed to: first, in the areas served by NGOs, the public sector may neglect their responsibility due to the presence of alternative service providers. For example, some NGOs, unlike the private sector, provide other support services such as credit. In such cases, the public sector FEWs may feel inferior and therefore avoid contact with the farmers. In addition, the NGO staff are usually better resourced and remunerated than the public sector FEW; secondly, in some cases the NGOs facilitated the public extension staff to implement their activities, in which case the staff act as agents of the NGO rather than the extension staff of the public sector.

Unification of agricultural extension services

The creation of MAAIF, from the merging of ministries, was a measure to save resources and to reduce duplication of services and rivalries in the line ministries and departments that previously provided extension services. This resulted in the unification of extension services where a single FEW is responsible for the delivery of all the agricultural information related to crops, livestock, fisheries and natural resource management. This reform, coupled with the public service reform that reduced the number of staff, increased the FEW's responsibilities and coverage. The national average FEW to farmer ratio increased from 1800 to 2000 farm families. The assumption was that there would be enough resources to facilitate and motivate a reduced staff force and that regular training, prevalent of the T&V system, would help update the FEWs in those areas outside their original discipline. The extension staff had mixed feelings about the unification of the extension service. Whilst some thought it served the farmer in a holistic manner, widened the FEW's understanding of different agricultural disciplines and was a more efficient way of using resources, some complained of the heavy workload, marginalisation of some disciplines and lack of proficiency in disciplines outside the original training, which some referred to as 'professional confusion'. The monthly training programmes were irregular and inadequate to make the FEWs proficient in all aspects of agriculture. This then implied that the FEWs still concentrate on advising farmers in the areas in which they were confident, and thus contradicting the concept of unification. The unification of extension and reduction in staff increased both the responsibility and coverage of the FEWs. This created the need for MAAIF to deliver services through farmer groups and this is now the major approach used by MAAIF and NGOs.

Evidence indicates that non-members of farmer groups were disadvantaged in accessing extension services, mainly in the areas served by NGOs (Gwaragwara and Sanje). Although the NGO services seem more accessible by farmers in groups, the same is not consistently evident in areas served largely by the public sector. The NGOs appear to utilise groups for the delivery of extension services, but the public sector does not. In some instances, non-members of groups in areas served mainly by the public sector extension (e.g. in Busibira) had more access to services than members. Reasons for this include the pressure put on FEW to form groups for the delivery of extension information, rather than farmers freely forming their own groups. Further, FEWs rarely have the necessary skills to effectively manage groups.

Decentralisation

The most serious effect of decentralisation on service delivery is the lack of resources for the provision of essential services. The district revenues (from taxes) can hardly pay the salaries of district employees, and the block grants from the central government are inadequate to facilitate the provision of services. The extension staff lack transport, demonstration materials, and training opportunities. Payment of staff salaries is often delayed for several months and sometimes their allowances are not paid. The district structure offers no opportunities for career advancement, which further demoralises staff. More to this, staff retrenchment is often seen as a way of reducing district expenditures, which creates a strong sense of job insecurity amongst staff. Due to financial constraints, the district authorities often divert funds budgeted for other sectors to solve some of the most pressing problems such as the payment of salaries to district employees. The extension budget is one of the easiest to cut, partly because it is difficult to measure the impact of extension and it appears that the district administrators have a poor understanding of the value of extension. During interviews, an extension worker cited an example where he had been pushing for an increase in the budget to extension and was asked by the administration to prove exactly how much extension had contributed to the district's revenue.

Privatisation

Privatisation has created an important source of agricultural information in the input suppliers, but farmers now complain of inputs being difficult to obtain due to a lack of reliable suppliers, the high cost and low quality of inputs, and sometimes the suppliers providing inaccurate technical information. In some instances, unscrupulous traders faked and adulterated inputs especially chemicals and seeds. While this case study focused on access to agricultural extension services, it is evident that farmers face more pressing problems. Farmers' prioritise the following problems above access to extension: Lack of capital to invest in buying seed, improved livestock breeds and other farm inputs; lack of inputs; pests and diseases of crops and livestock; unpredictable weather; and, lack of markets and low prices for agricultural produce.

Conclusions

- The Ministry of Agriculture, Animal Industries and Fisheries (MAAIF) places emphasis on targeting the resource-poor, but it does not clearly define who are the resource poor farmers. There is a need to clearly identify and categorise farmers to enable the public sector extension services to be targeted to those who really need them.
- Evidence shows that farmers resident in areas that are served by more than one extension service provider are likely to have more access to extension services than those farmers in areas served only by the public sector. Co-operation between different extension service providers to share out responsibilities would reduce this *inequity. This would involve the formulation of strategies that aim to achieve a* pluralistic extension system, where there is an efficient and effective mix of extension service providers.
- There needs to be a re-assessment of the actual capacity, in terms of delivering services to farmers at the district level, that the public system can manage. Retrenchment processes were administered irrespective of the original ideal staffing structure recommended by the MAAIF.
- Policy and decision makers at the district level need to be made aware of the important contribution agricultural extension can make towards increasing the welfare of rural people who are the majority.
- Government extension staff need more resources, recognition and encouragement for them to carry out their duties effectively and with high motivation
- In view of the fact that the majority of farmers state other farmers as the major source of information, the public sector should make more use this mechanism for the delivery of information. MAAIF needs to examine how emerging approaches, such as farmer-led and farmer - farmer extension, could be incorporated into extension policy in Uganda.
- There is confusion amongst farmers about the public sector's role in the provision of extension services. Farmers should be made aware that in its new role it is primarily a provider of non-material and not material inputs.
- Farmers face many other constraints in sustaining their livelihoods. Ironically, although agricultural extension services would be required to solve all the other expressed problems, it was not in itself considered very crucial (extension was ranked sixth behind capital). This indicates that the farmers do not value information per se unless it is accompanied by other support services to overcome the farm problems in a wider context.

Extension should be seen as a valuable tool in the process of development, although naturally some farmers' problems are beyond its scope it is important for improving, or at least maintaining the livelihoods of farming communities. Extension's role should be one of facilitation in providing farmers with choices, which enables them to make informed decisions about their agricultural practices. Adult educators argue that extension is most valuable when it helps farmers, their families and their communities to 'learn how to learn' and enhance active participation in choices concerning extension's content and methods (Rivera, 1998). If agricultural extension should provide services for all, and not only the most productive and efficient sector of the farming population, then extension must now combine social goals of equity, participation and sustainability along with economic goals of efficiency and effectiveness.

References

Carney, D. 1998. Changing Public and Private Roles in Agricultural Service Provision. London: Overseas Development Institute.

MAAIF. 1996. Modernisation of agriculture in Uganda: the way forward 1996 - 2000. Entebbe: MAAIF, Uganda

MPED/World Bank. 1995. Uganda National Integrated Household Survey Report. Kampala: Ministry of Planning and Economic Development, Uganda.

Rivera, W.M. 1998. Agricultural extension as adult education: institutional evolution and forces for change. International Journal of Lifelong Education 17 (4), 260-264.

Rivera, W. M. 1990. Trends and issues in international agricultural extension: the end of the beginning. Journal of Extension Systems 6(20): 87-101.

Swanson, B., B.J. Farner. & R. Bajal. 1990. The Current State of Agricultural Extension Worldwide. In: Report of the Global Consultation on Agricultural Extension. Rome: FAO.

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Global Differences in the Reform of Agricultural Extension: Confronting the New Paradigm

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ABSTRACT

Two major worldwide developments inform this paper and prompt my interest in global differences in the reform of agricultural extension. One is the modernization of agriculture which has unfolded at an accelerating pace since World War II. The other is the contemporary shift toward a transcontinental market-oriented economy.

The modernization of agriculture was greatly enhanced in the 1960s with the development of the so-called Green Revolution. It signalled a change from low-investment, low-yield agriculture to high-investment, high-yield agriculture. This Green Revolution brought with it immense gains in productivity but also dire consequences for the environment and questions about sustainability. The ideological and institution shift toward market-oriented economies has affected all public sector agency. This socioeconomic transformation has been encapsulated in the term, the new paradigm.

As the world has moved toward accelerated agricultural modernization and the new paradigm reduction of public services, agricultural extension has responded by taking a frontrunner role in these transitions. This frontrunner role has resulted in the "reinvention" of extension (Rivera 1996), and has led to my interest in two basic issues: (1) what is objectivelty happening to extension at the turn of the 20th century, and what do these developments herald for other national public services especially in the agriculturel domain, and (2) what is my subjective view of where extension -- agricultural, rural and urban -- is headed in the 21st century.

The first part of this paper outlines the variety of structural reform strategies resulting from national efforts to respond to the highly competitive and increasingly commercialized nature of agriculture. The second part reviews policy-driven extension reform strategies worldwide for their commonalities and differences. This review organizes extension reform strategies by geographic regions and economic zones. The third part of the paper considers contemporary extension reform strategies against the background of the new paradigm of information privatization and agricultural industrialization.

It is suggested that new priorities in agricultural and social development will modify the current trends in public sector extension towards decentralization and privatization. Though competitive and highly commercial agricultural information markets will continue to develop, other public sector concerns will eventually cause policymakers to reconsider the current redefinition of agricultural extension.

I. Major Policy-Driven Extension Strategies

Four major policy-driven strategies, each with a number of subsidiary strategies (Rondinelli 1987; Wilson 1991; Rivera 1998) appear to be the dominant extension reform strategies worldwide. They tend to form a continuum from least radical to most radical forms of structural change (Rivera 1998). They reflect decentralization trends in various forms,--from subgoverment enhancement, power-sharing arrangements, public sector delegation to a third party, and market-oriented reform strategies.

The two major policy-driven extension reform strategies that have resulted from the political and institutional criticisms against national agricultural extension systems are well known: market-based privatization and non-market-based decentralization strategies (Smith 1997). While market-based decentralization strategies involve private enterprise development, non-market-based decentralization strategies tend to enhance subgovernment responsibility for extension. In addition to these fiscally motivated structural changes, two other extension strategies deserve attention: dual public/private power-sharing arrangements and public sector delegation of funding and delivery responsibilities to third parties.

Some countries have chosen to improve their public sector without major reforms. In these countries extension systems have revamped their programs and instituted multiple mechanisms to finance public sector extension, particularly fees for services but do not radically change structurally, as in Israel and the United States. However, these systems are subject to increased decentralization, downsizing and partnerships with alternative suppliers. Market-oriented reforms, such as commercialization and privatization exemplify radical forms of policy-driven decentralization. Though the extent may differ, all reform strategies tend to constitute forms of decentralization.

II. Commonalities and Differences among Countries in their Extension Reform Strategies

COMPARISON OF DECENTRALIZATION TRENDS

There is little comparison of decentralization trends in general, much less regarding extension decentralization. The present study is intended simply to serve as a preliminary effort at establishing a groundwork for further analysis. The study outlines the main extension reform strategies being pursued at the end of the 20th century in the major regional and economic zones worldwide. It may be unnecessary but nonetheless cautious to state at the beginning of this shortened version of the comparative study that some reform strategies appear to be arbitrary, and not regionally comparable.

NORTH AMERICA

System Improvement. In some countries extension is historically decentralized. Devolved authority has long existed, e.g.: in Brazil, Canada, Germany, India and the United States. In the United States, the government's federally constituted nature is expressed in an overlapping financial and administrative authority for extension at the local, state and federal levels. It is not surprising then that minimal increases in decentralized shifting of programmatic and fiscal responsibilities would take place in countries which are already decentralized. However, the federal governments in these cases have reduced their contribution to state and local extension activities.

Devolution. With the NAFTA, North American Free Trade Agreement, Mexico has had to adjust to the fiscal demands of two powerful partners, Canada and the United States. In the mid-1980s, Mexico moved toward an extension cost-recovery system. Its first reform was to develop a fee-based system among large-scale farmers in the Northwest region with the plan of eventually developing a similar arrangement among small-scale farmers in the South-Central region (World Bank 1989). However, by the mid-1990s Mexico decided to devolve its system to state authority for extension.

LATIN AMERICA

In Latin America extension tends to develop in pockets, with sub-regional similarities. Moreso than elsewhere, the variety of reform is striking. Subgovernment enhancement, public/private power sharing, delegation and market-oriented reforms, all exist in varying degrees.

Devolution. Some countries in the southern American hemisphere have tended to devolve extension services to subgovernment levels, i.e., to the state level, as in Brazil, or to the municipal level, as in Colombia.

Public/private power sharing. In the 1980s, an interesting institutional innovation was introduced in several Latin American and Caribbean countries--namely the ADF, agricultural development foundation. The overall mandate for these foundations was to enhance the implementation of science-dependent growth strategies in this sector.

Delegation ("Tercerización"). Bolivia, Ecuador and Peru have shifted responsibility for agricultural extension to nonprofit non-governmental organizations (NGOs). This shift to third party NGOs (know in Spanish as "tercerización")

Market-Orientation. Argentina, Brazil, Paraguay and Uruguay are part of a vital economic alliance, Mercosur, or Common Market of the South. Mercosur is a trade block started by Argentina and Brazil in 1986 and extended to include Paraguay and Uruguay in 1991. This four-country merger changed the objectives of the original alliance from a managed trade regime to a common market with few exceptions to intra-regional free trade (IICA 1997).

AFRICA

"For most developing countries," according to Sarris (1990), "particularly for those in Africa where considerable adjustment effort has been directed, agriculture is, and will remain in the foreseeable future, the main sector producing exportable goods" (Sarris 1990, 1).

Delegation. In Francophone Africa in particular, delegation of authority for agricultural development is government's dominant policy. Public sector delegation to parastatals, e.g., the Compagnie francaise pour le developpement des fibres textiles (CFDT) is a well known strategy for shifting responsibility for extension to a third party,--in this case a private for-profit enterprise.

Devolution. Anglophone African countries, in contrast to Francophone African countries, have tended toward structural devolution in which national government devolves power to a subgovernment, i.e., state or municipality, as in Uganda. This strategy compares to Colombia's policy of devolution to municipalities and Mexico's policy of devolution to its states.

System Reinvention. However, many African countries have adopted the World Bank's Training and Visit (T&V) extension management system in an effort to reform their systems. Some argue that T&V appears to have contributed to agricultural development although others refute this claim.

NORTH AFRICA AND THE MIDDLE EAST

Deconcentration. North Africa and the Middle East (excepting Israel) are linked by common religio-culture and language. In general, these Arab countries have unitary governments and top-down systems of extension. Their tendency has been to deconcentrate the power of central government partially to branch offices with claims of devolution to subgovernment. Except perhaps in Morocco this latter claim is rhetorical at best.

ASIA

Asia, comprising three sub-regions: South Asia, Southeast Asia, and East Asia. appears to be drawn toward public-private partnerships and system improvement.

Public-Private Partnerships. South Korea and Taiwan have historically adopted public/private partnerships in extension. Both countries developed extension systems which are unified services with mobilization of local resources (Blanckenberg 1984). While the services in these two countries differ in some respects, they share certain characteristics, viz: (1) mobilization of resources at the local and regional level; (2) strictly decentralized extension programming; and (3) development work entrusted exclusively or almost exclusively to one service. While these characteristics may be operative in other systems in other countries it is a "pre-condition" for extension work in these Korea and Taiwan.

System Improvement. China is a case where structural improvement is paramount, and considerable help has been received for this purpose through loans by the World Bank. China has spend over US$ 100,000,000 through World Bank loans to upgrade its extension system. Its system employs the largest number of its extension workers in the world, about one half of the approximately 700,000 extension workers in the world.

Other Variants. Japan tends to be protective in its agricultural production, especially of rice. The Philippines has adopted a modified T&V extension management system, as has Indonesia. It is not my purpose in this paper to be exhaustive but rather to highlight the dominant or major extension reform strategies.

EUROPE

The objectives of the European Union are both commercial and political. Commercially the EU is seeking to integrate Eastern European countries, but has signed other inter-regional agreements, e.g. the Mercosur "Framework Agreement on Inter-Regional Cooperation". In this case the purpose appears to be primarily political, to act as a counterbalance to the influence of NAFTA and the United States (IICA 1997, 40).

Market Orientation. In Western Europe direct charging for extension services is the tendency in OECD member countries. Over half of the OECD member countries currently receive at least 20% of their finances from direct charging, and two (Finland and Norway) receive more than 50% from users. In addition to the OECD countries in the European Union, others member states have plunged toward fee-based agriculture through commercialized and privatized reform strategies: for instance, Australia and New Zealand.

Mixed Systems. Federally constituted governments with strong state authorities often have developed mixed systems regarding agricultural extension reform. Australia just mentioned is one example; Germany is another. Germany's 16 states can be grouped into three main organization forms for extension provision: Chambers of Agriculture in the Northwest, State ministries or departments of agriculture in the South, and private organized extension delivery systems in the Northeast.

CENTRAL AND EASTERN EUROPE AND CENTRAL ASIA

Restructuralization. Central and Eastern Europe and Central Asia are experiencing major transformations as a result of the demise of the Soviet Union in 1990.
In Central Europe, Eastern Europe and Central Asia efforts to commercialize or otherwise privatize agricultural development systems goes hand in hand with policies toward land reform of collectives and restructuring of the agricultural development process. Mongolia has privatized its agricultural knowledge support systems. Uzbekistan plans to gradually minimize government's authority for extension and, after a fixed period of time, eliminate its preliminary subsidizing outlays (Rivera 1998).

OTHER REFORM DEVELOPMENTS

Two other reform developments deserve notice: participatory extension and grassroots initiatives. Managerial reform through stakeholder participation in program development. This type of reform is often part of larger decentralization strategies, but nonetheless is significant in serious efforts to decentralize extension (World Bank 1995).

Valuable grassroots efforts have contributed to the reform and strengthening of the extension function, as well as to the promotion and advancement of indigenous agricultural research and extension, farmer-led extension efforts -- in some cases assisted by NGOs (Selener, Chenier, Zelaya 1997), and other farmer-to-farmer information-sharing activities. But even these efforts indirectly involve government, sometimes by way of assistance to NGOs, individual farm households, or farmer associations. Notwithstanding, it would be remiss not to recognize the breadth and complexity of extension and the various developments involved in reformulating a function that until recently was considered as a public sector service.

Forms of government. One dimension, not usually considered in extension discussions but which plays an important part in extension reform strategies, is political structure. For instance, Colombia's form of government has traditionally been a unitary one; recently, however, it has shifted power and responsibility to municipal subgovernments. In this and similar cases, such a shift suggests a move toward participatory democracy as well as a structural reform of extension services. The fact of constitutional differences among countries, unitary and federal, and their contemporary reform strategies merits close attention.

III. Confronting the New Paradigm

Comparative study of public policy-driven extension reform strategies is central to understanding the future of the public sector's relationship to agricultural extension. Extension has taken a frontrunner position in public sector redefinition. Its influence on agricultural information markets through the promotion of agricultural sustainability and environmental management, social equity, and new priorities is only in the incipient stages of being understood. Its contribution to rural and urban development has yet to be fully appreciated. Agricultural extension, like other historically considered public goods, is increasingly being decentralized and privatized to different degrees worldwide. I am convinced that there are limits to such approaches (Rivera 1999).

As I see it, national public sector extension policy, but not necessarily the delivery of services, is essential,--particularly for countries or regions within countries where there exist an abundance of small farmers. National level engagement is also required to ensure natural resource and environmental management. At stake is the future of agricultural extension as a national policy instrument. While the private sector may be the most important player in the agricultural information market worldwide, the public sector cannot be ignored.

Within the next decade, developed and developing countries will likely require public policy to respond to the pressing needs of the general public for information services related to food and agriculture. Arguments for public sector extension include the generally unbiased nature of public sector extension, the value that extension provides through client feedback, and the importance of extension education in moving disadvantaged people into mainstream society. New and emerging priority issues of public and therefore national interest are only partially being confronted, such as social equity, sustainable agriculture and a clean environment. These are common problems.

Extension's mission in developing countries will likely lag behind in terms of expanded programs and mission. Inevitably, much will depend of the type of developing country, its stage of development, socioeconomic status, and individual government polity inclinations. Hambleton (1997) suggests that these polity inclinations are toward one or another of the following: a dismantled state, an empowering state, or a decentralized state. But, as suggested at the beginning of this paper extension will likely be increasingly referred to as having various goals,--i.e., "agricultural" with emphasis on crop and animal production (including forestry and fisheries, fiber and pharmaceuticals; "rural" with greater concern with broad-based and other-than-agriculture entrepreneurial development in rural areas; and "urban" with the rapid advancement of urbanization and the increasing concern of general populations with food production and especially food quality.

New and emerging priorities promise to shape extension in the future. New programs and new clientele are being developed. Public sector extension in industrialized countries is expanding its mandate as agricultural issues overlap with other social and environmental issues. In such cases, extension provides services to the public which are pertinent to multiple government agencies, not just agriculture. The U.S. Cooperative Extension Service via its urban education programs is already working with the Environmental Protection Agency, the Department of Housing for Urban Development, the Department of Defense and the Department of Justice.

CONCLUSION

In sum, national public sector extension will probably continue to be diminished or dismantled in both developed and developing countries. At the same time, however, new priorities will likely challenge the public sector to develop new extension programs utilizing new methods and working with new as well as traditional clientele.

To date, extension's main responsibility has been the transfer of agricultural information to farmers and farm families. In the future, new questions are likely to be raised as a result of socioeconomic, political and technical developments. Responses to new developments will possibly alter what we think about who should be served, the issues to be addressed, and who should transfer extension services.

The private sector is only one player in the rapidly developing agricultural information market. Public sector policies and delivery services for agricultural information transfer are critical to balanced development. The public sector at both national and local/stage levels is likely to remain an important player in the advancement of agriculture, the promotion of social equity, and the development of new priorities to meet the needs of traditional and new clientele.

References

Blanckenberg, P. von. (1984). Agricultural Extension Systems in some African and Asian Countries: an Analysis of Country Reports. Rome: FAO, Economic and Social Development Paper, 46.

IICA (Instituto Interamericano de Cooperación para la Agricultura). (1997). The Agriculture of Mercosur: Past, Present and Future. Coronado, Costa Rica.

Rivera, W.M.; (1996); Reinventing Agricultural Extension: Fiscal System Reform, Decentralization, and Privatization; Journal of International Agricultural and Extension Education, 3:1, Spring, 63-67.

Rivera, W.M.; (1998); An Institutional Variant in Extension: The Rural Business Advisory Service in Uzbekistan; Journal of International Agricultural Education and Extension, Fall.

Rivera, W.M.; (1999, forthcoming); Whither Agricultural Extension Worldwide.

Rivera, W.M. & Cary, J.; (1997); Privatizing Agricultural Extension; In: Food and Agriculture Organization, Agricultural Extension: Reference Manual; Rome.

Rondinelli, D.A.; (1987); Administrative Decentralization of Agricultural and Rural Development Projects in Asia; In: Rivera, W.M. & Schram, S.G., Agricultural Extension Worldwide: Issues, Practices and Emerging Priorities; London: Croom.

Sarris, A.H. (1990). Guideline for monitoring the impact of structural adjustment programmes on the agricultural sector. Rome: FAO, Economic and Social Development Paper 95.

Schiavo-Campo, S.; (1994); Institutional Change and the Public Sector: Towards a Strategic Framework; In: Salvatore Schiavo-Campo (ed.); Institutional Change and the Public Sector in Transitional Economies. Washington, DC: The World Bank

Selener, D., Chenier, J., & Zelaya, R., et al. (1997). Farmer to Farmer Extension: Lessons from the Field (English translation). Quito: International Institute for Rural Reconstruction.

Wilson, M.; (1991); Reducing the Costs of Public Extension Services: In W.M. Rivera & D.J. Gustafson (eds.), Agricultural Extension: Worldwide Institutional Evolution and Forces for Change. Amsterdam: Elsevier.

World Bank. (1989). Mexico: Agricultural Sector Report. Washington, DC.

The World Bank. (1995). Participation Sourcebook. Washington, DC: p. 208-211.

Transforming Linkages in Research and Extension to Serve Farmer Needs in West Africa For the Next Century

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Abstract

Links between national agricultural research institutes and their clients -- technology transfer agencies and farmers are vital for successful technology development and delivery. Links with technology transfer agencies at the national level ensure impact through a wider dissemination and awareness of existing technologies; direct links with farmers, through on-farm research ensure relevance and rapid feedback (ISNAR 1990). Results from this study show that the two sets of links are necessary and very complementary.

As demand increases on NARS to increase output of appropriate technologies reaching farmers, research systems are often powerless in their strategy to generate and transfer technology to farmers through extension. Research is also limited in mechanism to listen and learn from farmers to assess their production practices, identify their production and related socioeconomic constraints. Research depends entirely on extension services to provide the vital link to farmers.

These links, according to the study, are difficult to sustain and often also, to organize especially when addressing the needs of resource-poor farmers. Experiences in The Gambia have shown that weak links have costs the National Agricultural Research Systems (NARS), a lot more than they could afford. Linkage problems have not only reduced efficiency, but have also impaired performance and diminished the impact of agricultural research (ISNAR 1990). This paper reviews means of strengthening national research and extension linkages and to bridge the gap that exists with their counterparts, the farmers.

Introduction

It has been the trend to date, in most countries in the sub region of West Africa, to have two systems in agricultural sectors - national agricultural research systems (NARS) and national extension systems (NES) -- operating separately and co-existing under different management, infrastructure and often political mandates. Studies done in 1996 in the Gambia have determined this to be the impetus for ineffective and limited nature of the two systems in their respective functions to agricultural development. The ultimate goals for agricultural research and extension, improving farmer productivity and increasing production, are yet to be met in most areas in the sub region.

NARS are increasingly being pressured to increase output on innovative technology; while research systems are coming a long way in meeting this demand, research systems are not in a position to communicate innovative technology to farmers, neither do they have the mechanisms to listen, learn and interact with farmers in addressing problems and coming up with relevant solutions to meet their needs. Extension is the 'cord' that connects research and farmers. A strong linkage or feedback loop between research and extension would bridge the gap that is apparent but not present.

The paper provides a vivid view of the existing operational structures of NARS and NES as they co-exist as separate units. The paper illuminates the issue that research and extension need to "team-up" on a stronger basis than present, to address the major challenge of meeting the needs of resource-poor farmers in increasing their productivity.

The Study

The study was done in The Gambia, an evaluation study that examined the structure and functions of the research system (NARS) as well as the structure and functions of the extension system (NES), as they co-existed as separate entities in the agricultural sector. In particular, the study was conducted as a means of strengthening the weak links that existed between the two and with their development counterparts, the farmers.

The study examined various contexts of links, as highlighted by the existing operational agricultural research structure in the NARS, as well as the existing operational extension structures in the NES. Two types of links stood out to be significant for a sustained integrated research-extension based structure that might meet the challenge of technology generation and delivery to increase the productivity of resource poor farmers: a. Policy and institutional contexts of links, as a determinant for the types of strategies and mechanisms that may be used to determine links; b. organizational contexts of links with a view to organizational factors that might affect links.

From a policy and institutional perspective, key contextual factors found to influence links included agricultural research policies, resource situation, technical factors with a view to technologies generated by and available from NARS, as well as the diversity in agroecological conditions and production systems. From an organizational perspective, the study emphasized the need to consider organizational structure of the NARS, both as an entity within which many factors might affect links, and as a variable that can be manipulated to achieve goals. While small institutions like that of the NARS in The Gambia might benefit from informal links among key players, severe resource constraints and, majorly lack of consensus among players in the NARS and the NES, stood out to be significant setbacks in sustaining basic links.

The study proposes two types of linkages mechanisms for an integrated research-extension system in W. Africa; structural mechanisms that may establish links between interdependent units such as the NARS and NES with farmers, and institutional mechanisms that might strengthen established links.

The study concludes that building effective linkages with agents of change as well as with technology users is vital in the agricultural development process, in particular, strengthening the main "cord" that runs through NARS, NES, and farmers of greatest relevance in an integrated research-extension framework.

Purpose

The purpose of this paper is to highlight the significance of linkages or feedback loop between research and extension in international agriculture and extension education, in particular its role and potential impact on farmers with relevance to meeting and sustaining their needs for improved productivity. This paper examined existing operational structures in agricultural research and agricultural extension though National Agricultural Extension Systems (NAES) and National Agricultural Research Systems

(NARS) in the sub-region. To date, the two systems have operated as separate entities working at parallel levels, and often on a competitive nature The effect of this has not only been costly for governments in the sub region but has been grossly ineffective in achieving respective goals in research and respective targets in extension. The paper also examined the extent to which researchers and educators consider respective roles in extension and the implications of this on their partners in development -- their counterparts, the farmers.

The question that arises from the issues brought forth is whether operations in agricultural research and extension as separate entities, independent and collaborative are effective and contribute to meeting the needs of farmers, or whether indeed, an integrated operational structure of the two systems might best serve farmers? While an integrative approach may be ideal to affect farmers in the 21st century, what kinds of shortfalls are envisioned, and how could linkages be strengthened? The paper proposes methods from for transforming linkages, a task that educators and practitioners should embrace for the 21st century.

The purpose of this paper thus is two-fold:

1. To determine how agricultural research and extension systems in the sub region may be linked in an integrative mode for greater enhancement and sustainability of extension structures through exploring:
    a. how research could feed extension within an integrated system;
    b. whether/if research and extension in an integrated mode could achieve goals and meet targets effectively;
    c. whether/if the parallel and competitive nature could be eliminated;
    d. how farmers could best be served within an integrated system.

2. To determine methods of strengthening an integrated research/extension system through:
    a. examining shortfalls from past systems and proposing ways to address them;
    b. proposing an ideal operational framework that might be replicated in other settings.

Focus will be on case examples, in particular research and extension structures in existence in the sub region, their respective functions and activities and their modes of addressing farmer needs. Emphasis will be on linkages that have been made, their impact, and linkages that could be made, what potential impacts proposed linkage and feedback loops from this study could have on the agricultural environment in the 21st century.

Method

The method includes an assessment of the operations and functions of the NARS and NAES in the sub-region, an observation of the activities and an evaluation of the outcomes over time. The study also included a survey of samples of farmers across ecologies in the sub-region for their perceptions on the extension systems in particular. Interviews were conducted on a sample of extension agents from the national system as well as from grassroots extension organizations. Interviews were also conducted from a sample of agricultural research agents to gain their respective perspectives on the operations and outcomes of research and extension as separate entities, and especially, on their views of what system might best serve farmers.

Extensive document review was conducted on

-activities that were/are in operation, various agricultural research conducted, and how results were disseminated;

-what collaboration existed/s between researchers and extensionists, and how/whether/if farmers were/could be a part of the cycle.

Results

The operational mandates by research and extension systems under a farmer-centered approach have implications in the organizational structures of both institutions. Institutional set-ups effects operations.

Research has a country-wide mandate. The institutional organization is compromised between centralization and decentralization, between vertical and horizontal delegation of authority. Extension's object is to reach farmers in all regions of a country. National Extension is a tool for policy implementation and this has implications on the structural set-up of technology transfer services. In the Gambia's case, Research units follow agroecological distinctions, while technology transfer units follow administrative ones; research is divided on a disciplinary basis while technology transfer is divided by commodity and geographical area.

Services are hierarchical, highly centralized, heavily regulated, and standardized according to civil service procedure. Decentralization in decision-making is rare and regional boundaries between different units are based on administrative criteria rather than socioeconomic or agroecological considerations. Tasks related to technology transfer are technology production, delivery of technologies to farmers, and monitoring and evaluating of technologies.

Among the many flaws that exists in this system, two stood out as distinct in the study:

- extension tasks are inadequately defined and this has seriously undermined the dissemination process;
- important tasks for the development and delivery of technologies go unassigned; technology consolidation and technology production are two tasks that go unassigned; the outcome of this is developed technologies sitting unused on dusty shelves of NARS.

Three main issues emerged from this study:

1. Unless research and extension units are integrated to function under a single system with scope for feedback and complementarity, efforts in the two systems will continue to have limited effect on the agricultural infrastructure as a whole.

2. Farmers are enthusiastic partners in development, innovative and are very resourceful given their knowledge base, however, it is impractical that so much research output and technology are sitting on the shelves of research institutes that farmers cannot access adequately through extension or otherwise;

3. Considerable resources are being pumped into the two systems as they function separately, national governments would save at least half the resources being used for the two systems to function separately; resources could be channeled to other areas in the agricultural sector, especially to areas for extension links and extension infrastructure as well as for farmer resourcefulness and participation in the research-extension link.

Conclusions and Recommendations

The study concludes that organizational structures are not immutable. They can be modified to facilitate integration. In particular, managers can make adjustments so that part of the modified structure function as a linkage mechanism. The study recommends merging as one type of unit grouping that can be applied to agricultural research and technology transfer systems in West Africa.

However, merging comes with its set of problems, in particular, increase in size and mandate can lead to increased complexity with the view that greater size is associated with greater specialization. Even a small system with a broad mandate can be very complex, but it is able to specialize tasks as much as much as a large system because of limited resources.

Weak linkages among institutions of research, education and extension (REE) result in systematic "bottlenecks" in national systems and limit their effectiveness to contribute to development. The study evidenced that integrating research, education and extension can improve the overall performance of agricultural technology systems.

The study suggests that extension has a major role in linking research and farmers in the following ways:

a. Facilitation: Extension facilitates:
  - farmers participation in research;
  - farmers' capacity to modify and adopt technology to their local conditions using their own experiences;

b. A tool: Extension serves as a tool for:
  - policy implementation which has implications for structural set-up of services;
  - improved communication and mutual understanding between extension and research;
  - increased efficiency in the use of time and resources; for instance the time lag between the completion of research findings and their adoption may be shortened, the number of extension specialists could be reduced by involving researchers in in -service training of extension workers.

Finally, the study recommends a gradual merging process through:

-secondment of extension staff to research programs;

- the creation of committees that might coordinate the two systems;

- the creation of integrated field teams that functions within the two systems under one umbrella.

Below are highlights for successful integration efforts among relevant players:

-That actors realization of the necessity for integration;

-The need to promote/nurture broadbased partnership for research and extension under the framework of farmer focused approaches;

-Within the framework of institutionalizing farmer-focused approaches, implementation of policies and procedures to promote participatory approaches within the system of research/extension/farmer and vice versa;

Educational Importance

It is time for an awakening for educators to think, plan and communicate the integrated forms for research and extension for greater effectiveness at the farm level. Research has been communicated separate from extension in agriculture and the effect on farmers has so far been apparent in the low levels of productivity, low rates adoption of innovation, and low profitability from the missing or limited link. The message for educators is that regardless of input and knowledge, it is impractical if research output is not fed into the right channels. Agricultural research and extension need to function under the same umbrella. Research needs to feed extension, and extension needs to benefit from research. The educational importance of this paper is that it brings to light, the apparent but inadequate or limited linkages between research and extension in agricultural development.

References

Breth, S.A. (ed) 1996. Investments in Africa. Sasakawa Africa Association, Mexico City 1996.

Byerlee, KD. and Tripp, R. "Strengthening linkages in Agricultural Research Through a Farming Systems Perspective". The Role of Social Scientists. In Generational Maize and Wheat Improvement Center (CIMMYT), Lisboa, 27, Apartado Postal 6-641, Mexico, DF 1992.

Chambers, R. Challenging the professions: Frontiers for Rural Development. London: IT Publications 1993..

Chambers, R. The PRA Revolution. Farm Africa NEWS, Spring 1996.

Chambers, R. Whose reality counts? Putting the first last. London, UK:Intermediate Technology Publications 1997.

Cernea, M., J. Coulter, J. Russel (eds). Research-Extension-Farmer-a Two-way Continuum for Agricultural Development. A World Bank and UNDP Symposium. The World Bank 1985.

Ewell, P. 1989. Linkages between On-Farm Research & Extension in Nine Countries. OFCOR Comparative study paper #.4. The Hague, Netherlands: ISNAR.

Jahnke, H.H. Kirschke, D. and Lagemann, J. "The Impact of Agricultural Research on Tropical Africa". Consultative Group on International Agricultural Research, Study Paper Number 21, The World Bank, 1987.

Meindertsma, J.D. Setting Research Priorities. Royal Tropical Institute. (Development Oriented Research in Agriculture; 5) 1994.

Merrill-Sands, D., and kaimowitz et al. The Technology Triangle: Linking Farmers, Technology Transfer Agents and Agricultural Researchers. International Service for National Agricultural Research (INSAR). Summary Report of an International Workshop held at INSURE, the Hague, 1989.

Scones, I. and Thompson, J. 1994. Knowledge, Power and Agriculture: towards a theoretical understanding. In: Beyond Farmer First: rural peoples knowledge, agricultural research and extension practice, ed. I. Scoones and J. Thompson, 16-31. London, UK:Intermediaye Technology Publications.

Selener, D., Chenier, J. and Zelaya, R. !997. Farmer to Farmer Extension: Lessons from the field. Quito, Equador: Internation Institute for Rural Reconstruction.

Tripp, R.,(ed) 1991. Planned Change in Farming Systems: Progress in On-Farm Research.

WARDA Annual Report, 1996. Farmers in the Driving Seat. p41. Cote D'Ivoire.

UPDATING EXTENSION'S FARM DEMONSTRATION MODEL:
THE VALUE OF AN ON-FARM RESEARCH TRIAL FOR DAIRY PRODUCERS

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UPDATING EXTENSION'S FARM DEMONSTRATION MODEL: THE VALUE OF AN ON-FARM RESEARCH TRIAL FOR DAIRY PRODUCERS

Abstract

The farm demonstration has been extension's revered model for teaching recommended practices, the product of experiment station research, to farmers. For various reasons, including the need to examine farm problems holistically and to speed the research-teaching process, some recent extension and research programs have been integrated in the form of on-farm research trials. One example is the Dairy Total Quality Management (TQM) program that involved 58 dairy producers from five states in research trials that aimed to test and teach management practices to improve milk quality. The purpose of this research was (1) to describe the benefits to dairy producers two years after their participation in the TQM on-farm research trial, and (2) to compare the milk quality of participants to non-participants. A comparison group of Pennsylvania non-participants was matched case-for-case with Pennsylvania participants based on herd size and geographic location. Data were collected via a mailed questionnaire. Participants reported five benefits indicating that the TQM trial helped them gain knowledge and skills which contribute to greater milk quality. Pennsylvania TQM participants adopted, on average, two more recommended practices than non-participants. Participants were more likely than non-participants to follow three of four TQM practices related to antibiotic treatments.

Introduction

The demonstration teaching method has been used successfully since the earliest days of United States extension work. Seaman A. Knapp is credited with the first on-farm demonstration in Terrell, Texas (Seevers, Graham, Gamon & Conklin, 1997). Based on local initiative, involvement, and support, Knapp's on-farm demonstrations gained wide appeal among extensionists, scholars, and agriculturists, as a way to transfer best farming practices. The success of on-farm demonstrations initiated a grassroots effort of concerned citizens who petitioned USDA to hire the first county-based field agent in 1908. In the formal establishment of the land-grant university's Cooperative Extension Service mission, the Smith-Lever Act of 1914 mandated "practical demonstrations" in agriculture and home economics (Smith-Lever Act, 1985, amended). On-farm demonstrations became widely recognized as the essence of extension work, as shown in Norman Rockwell's *The County Agent* - a painting depicting a county extension agent teaching calf selection to a farm family (Rasmussen, 1989).

On-farm demonstrations have been particularly effective teaching tools because individuals engage in experiential learning and observation (Krishan, 1965; Cowden, 1966). Extension educators have generally assumed that innovations viewed by farmers in the controlled environment of agricultural experiment stations (i.e., at experiment station field days) would be inferior to on-farm demonstrations in terms of adoption rate. On-farm demonstrations of dairy innovations have been particularly effective at influencing change among dairy producers (Hartman & Brown, 1970). Peters, Manspeaker, & Russek-Cohen (1986) conducted 19 on-farm extension meetings in nine Maryland counties to demonstrate mastitis control. Two months after the initial meetings, a follow-up survey revealed that the majority of participating dairy producers had made changes to improve udder health.

While on-farm demonstrations are still relevant, current extension methodologies suggest the need for farmers, extension agents, university specialists, and others to work in teams that integrate research and extension missions (Bezdicek & DePhelps, 1994; Batie & Swinton, 1994; Hood, Schutjer & Evans, 1990; Bennett, 1990). Successful on-farm research has held promise for such integration (Bezdicek & DePhelps, 1994). The difference between on-farm research trials and demonstrations is that innovations shown in on-farm demonstrations have typically been researched extensively at experiment stations while research trials involve relatively newer and uncertain innovations. Additionally, one change agent (i.e., extension agent) typically provides expertise and initiative for the farm demonstration whereas research trials utilize a network of service professionals. Increasingly, agricultural extension programs are implemented with professional networks; Bolton (1991) described Wisconsin extension agents as helping dairy producers improve milk quality by coordinating and mobilizing teams of local dairy industry service professionals.

Purpose

The purpose of this research was to evaluate on-farm research trials for dairy producers participating in an extension-lead dairy management for milk quality education program, Dairy Total Quality Management (TQM). Specific research questions that guided this investigation were:

1. To what extent, if at all, have the TQM research trials benefitted dairy producers two years after their participation?
2. Given that dairy management information is available from many sources, how do TQM participants compare to non-participating dairy producers in their use of recommended practices for quality (safe) milk and quality indicators?

Methods

In 1996 on-farm research trials were completed by 58 dairy producers in five states (Colorado, Georgia, Iowa, Michigan, and Pennsylvania) who were guided by teams of TQM implementors. These implementors included extension agents and state extension dairy specialists in cooperation with veterinarians, milk sanitarians, and others. These implementors invited dairy producers to participate, collected entrance data, visited the farm at least three times during the six-month research trial, and collected exit data regarding milk quality and production.

Dillman's (1978) research design methodology guided the development of the research instrument and data collection. A benefits scale was constructed based on the program objectives; scale development used guidelines proposed by DeVellis (1991). A panel of five experts reviewed the instrument to determine face and content validity. The panel members were Pennsylvania State University faculty members in agricultural and extension education, veterinary science, and agricultural economics and rural sociology. Parten (1950) indicated that a pilot test would reveal an instrument's shortcomings. The instrument was pilot tested with 23 dairy producers in three states (Alabama, California, and Minnesota) who completed research trials one year later than the target population. The 13-item benefits scale had excellent reliability (Cronbach's alpha = 0.95). This research used a mailed questionnaire to contact TQM participants, and 80.8% of TQM participants responded.

To compare TQM participants' milk quality and milking practices to those of non-participants, a non-participating Pennsylvania comparison group was identified. These dairy producers were matched case-for-case with Pennsylvania participants, based on geographic location and herd size, by Penn State Cooperative Extension dairy agents, and 81.3% of non-participants responded to the mailed questionnaire. The data set was constructed and analyzed using the Statistical Package for the Social Sciences (SPSS, 1988).

Results

Research Question 1 - Benefits

Participants were asked to describe how their participation in the TQM research trial may have affected their dairy operation. The Likert-type response scale included: 1 - harmful, 2 - no help at all, 3 - slightly helpful, 4 - fairly helpful, and 5 - helpful. Of the 13 benefits, five were reported by the majority of TQM participants as being fairly helpful or helpful to their present dairy operation. These five benefits represented different outcomes. Three of these benefits, "identify chronic mastitis cows" (56.4%), "improve milk quality" (61.5%), and "keep antibiotic residue out of milk" (56.4%), are practical. "Understand drug withdrawal times" (51.2%) indicate new knowledge gained, and "improve communication with my veterinarian" (51.3%) possibly represents a change in attitude (Table 1).

A summated benefit value was developed. Theoretically, benefit values could have ranged from a low of 13 to a high of 65. The mean value for the benefits scale (grouped data) was 41.7 with a low value of 26 and a high value of 63 (SD = 10.4). The benefits mean was slightly above the theoretical mid-point of 39 reflecting that overall the TQM participants perceived a "slightly helpful" benefit (Table 2).

Table 2. Participants Summated Benefits Value

TQM Benefit Qualitative Interpretation	Value Range[a]	N	%
Harmful	13-23	--	--
No help at all	24-34	11	26.2
Slightly helpful	35-44	14	33.3
Fairly helpful	45-55	13	31.0
Helpful	56-65	4	9.5
Total	XXX	42	100.0

[a] Value Range indicates the possible summated range of benefit scores for 13 TQM benefits.

Note: theoretical range 13-65; theoretical midpoint 39; summated mean score = 41.6; SD = 10.4; median = 42; mode = 26; range = 26-63

Research Question 2 - Comparison of Milking Practices and Milk Quality

The Pennsylvania comparison group had a high degree of similarity with the Pennsylvania non-participants in age (participants mean = 44.9; non-participant mean = 43.7), people working on the farm (participants mean = 1.4; non-participant mean = 1.2), and number of dry cows (participants mean = 11.2 ; non-participant mean = 8.6). Participants were milking an average of 11 more cows than non-participants (participants mean = 77; non-participant mean = 66).

Of the three TQM program components, antibiotic treatments, milking practices, and quality goals, TQM participants and non-participants differed most in antibiotic treatment practices. Most participants (81.8%) reported keeping written records of all antibiotic treatments compared to only 23.1% of non-participants. Four out of ten (45.5%) participants had written plans for treating sick cows and had developed those plans in consultation with a veterinarian compared to only one (7.7%) non-participant who did so (Table 3).

Table 1. Distribution of Perceived Current Benefits Resulting from Participation in TQM[a]

	No Help at All		Slightly Helpful		Fairly Helpful		Helpful		All Cases	
Benefit Statement	N	%	N	%	N	%	N	%	N	%
Identify chronic mastitis cows	7	17.9	10	25.6	15	38.5	7	17.9	39	100.0
Make culling decisions	13	33.3	13	33.3	6	15.4	7	17.9	39	100.0
Understand drug withdrawal times	8	20.5	11	28.2	7	17.9	13	33.3	39	100.0
Improve milk quality	6	15.4	9	23.1	17	43.6	7	17.9	39	100.0
Keep antibiotic residue out of milk	11	28.2	6	15.4	11	28.2	11	28.2	39	100.0
Improve milking time procedures	16	41.0	11	28.2	7	17.9	5	12.8	39	100.0
Treat disease	11	28.2	16	41.0	7	17.9	5	12.8	39	100.0
Improve overall herd health	6	15.4	14	35.9	12	30.8	7	17.9	39	100.0
Improve farm decision-making	10	25.6	14	35.9	8	20.5	7	17.9	39	100.0
Improve communication with my employees	14	37.8	6	16.2	12	32.4	5	13.5	37	100.0
Improve communication with my extension agent	19	48.7	13	33.3	3	7.7	4	10.3	39	100.0
Improve communication with my veterinarian	9	23.1	10	25.6	14	35.9	6	15.4	39	100.0
Improve communication with my sanitarian/milk receiver	16	41.0	13	33.3	7	17.9	3	7.7	39	100.0

[a]Responses were given on a Likert-type response scale: 1 - harmful, 2 - no help at all, 3 - slightly helpful, 4 - fairly helpful, 5 - helpful. No participants indicated that any of the benefit statements were harmful.

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Table 3. Relationships Between TQM Participation and Use of Recommended Practices for Milk Quality

Program Components and Specific Practices	Producers Reporting Practice Adoption Non-Participants N=13	 %	 TQM Participants N=11	 %
Antibiotic Treatments	(3.5)	(26.9)	(7.5)	(68.2)
Written records of all antibiotic treatments	3	23.1	9	81.8
Mark cows treated with antibiotics	9	69.2	11	100.0
Have written plans for treating sick cows	1	7.7	5	45.5
Plans for treating sick cows by veterinarian	1	7.7	5	45.5
Milking Practices	(9.0)	(69.2)	(8.0)	(72.7)
Strip and check fore-milk	7	53.8	11	100.0
Teat dip before milking	11	84.6	10	90.9
Water and sanitizer wash	2	15.4	2	18.2
Wash with a single use paper towel or cloth	9	69.2	6	54.5
Dry with a single use paper towel or cloth	13	100.0	11	100.0
Teat dip after milking	13	100.0	10	90.9
Cows stand about 30 minutes after milking	8	61.5	6	54.5
Quality Goals				
Set one or more goals to improve milk quality	9	69.2	10	90.9

Participants (mean = 8.5) and non-participants (mean = 6.5) differed significantly (t = 2.87; p < .01) in their use of the 12 TQM practices. Yet, no significant differences were found in milk production or quality indicators: rolling herd average, somatic cell count, or bulk tank bacteria count (Table 4).

Table 4. Comparison of TQM Practice Use, RHA, Quality Indicators, and MDBQAP Completion Between Participants and Non-Participants

Factor	N	Mean	S.D.	t
Number of TQM Practices in Use				
TQM Participants	11	8.5	1.9	2.87*
Non-Participants	13	6.5	1.5	
Rolling Herd Average				
TQM Participants	11	20,360.1 pounds	2640.4	-0.78
Non-Participants	13	21,210.7 pounds	2675.8	
Somatic Cell Count				
TQM Participants	11	218,363.6 cells	110,940.7	-0.42
Non-Participants	13	239,692.3 cells	132,867.9	
Bulk Tank Bacteria Count				
TQM Participants	9	2888.8	2258.5	0.04
Non-Participants	11	2854.5	1797.9	

*significant at the .01 level

Conclusions

1. Participants rated TQM as being "slightly helpful" to their dairy operation. Participants reported five benefits indicating that the TQM program helped them gain critical knowledge and skills which contribute to greater milk quality. It can be concluded that the TQM program taught

producers to use new management practices for milk quality or reinforced practices they were already using.

2. The value of delivering dairy management for milk quality education via a research trial experience is evident by the fact that Pennsylvania TQM participants adopted, on average, two more recommended practices than non-participants. Participants were more likely than non-participants to follow three of four TQM practices related to antibiotic treatments. All of this despite the fact that milk quality information is readily available to dairy producers. *Hoard's Dairyman*, published 20 times each year, has a regular milk quality feature. An issue in 1997 highlighted four TQM practices (setting quality goals, pre-dipping, post-dipping, and routine milking procedure) in an article describing the dairy management for milk quality of the Michigan Milk Producers Association Overall Top Quality Award winners (Moser, 1997).

Educational Importance

From the perspective of formative evaluation, the results of this study can improve the dairy TQM program. A TQM record-keeping system must be designed to reflect the fact that producers were least likely to still be keeping written records of antibiotic treatments, developing written plans for treating sick cows, and consulting a veterinarian to develop those plans. One possibility is to offer the plans multiple formats (computer records, barn postings, pocket-notebook size, etc.) to accommodate different learning styles and record- keeping preferences.

Given the results of this study, the role of the extension agent in affecting change should be examined. Perhaps many would do well to facilitate teams to affect change rather than designing programs in which the extension agent is the "sage on the stage," the sole educator/key informer. The finding that one-half (51.3%) of TQM participants rated the program as at least "slightly helpful" in improving communication with their veterinarian is a positive testament to the team-based approach to extension programming. Additionally, this finding demonstrates that the value of a research trial experience is not completely described in terms of new knowledge gained by dairy producers. Steele (1995) argues that other knowledge gains, including reinforcement of ideas already learned and focusing attention on a problem, are often more relevant for gauging the value of adult education programs.

The value of on-farm demonstrations cannot be disputed, however, it is not prudent to use teaching techniques based solely on past successes. On-farm demonstrations, like all teaching methods, must be viewed in light of their potential to reach and teach the target audience. While research trials cannot replace on-farm demonstrations for all farm communities, they may be better teaching tools for today's United States dairy producers who are more educated and have more information sources than their predecessors.

References

Batie, S.S. & Swinton, S.M. (1994). Institutional issues and strategies for sustainable agriculture: View from within the land-grant university. American Journal of Alternative Agriculture,9(1 and 2), 23-27.

Bennett, C.F. (1990). Cooperative extension roles and relationships for a new era: A new interdependence model and evaluation synthesis to foster work with other agencies and organizations (Monograph No. PB 90-199522). Washington, D.C.: Extension Service, U.S. Dept. of Agriculture.

Bezdicek, D.F. & DePhelps, C. (1994). Innovative approaches for integrated research and educational programs. American Journal of Alternative Agriculture, 9(1 and 2), 3-8.

Bolton, H.K. (1991). The extension agent's role in utilizing local service professionals in udder health and milk quality programs. Reno, NV: Proceedings of the 30th Annual Meeting of the National Mastitis Council, Inc. pp. 105-110.

Cowden, L.V. (1966). Method-demonstrations and method-demonstration meetings. In H.C. Sanders (Ed.), The Cooperative Extension Service (pp. 137-144). Englewood Cliffs, NJ: Prentice Hall.

Davis, J.A. (1971). Elementary survey analysis. Englewood, NJ: Prentice-Hall.

DeVellis, R.F. (1991). Scale development: Theory and applications. Applied Social Science Research Series, Vol. 26. Newbury Park, CA: Sage Publications, Inc.

Dillman, D.A. (1978). Mail and telephone surveys: The total design method. New York: Wiley and Sons.

Krishan, R. (1965). Agricultural demonstration and extension communication. New York: Asia Publishing House.

Hartman, J.A. & Brown, E.J. (1970). Evaluation of a five-year demonstration farm program in two Pennsylvania counties. The Pennsylvania State University and Tennessee Valley Authority: Extension Studies No. 43. (ERIC Document Reproduction Service No. ED 060 415).

Hood, L., Schutjer, W. & Evans, D. (1990). Integration of research and extension: It's a priority at Penn State. Choices (3rd quarter), 22-24.

Moser, L. (1997, Feb. 10). Sound management practices lead to high quality milk. Hoard's Dairyman 142(3), 92.

Parten, M. (1950). Surveys, polls, and samples: Practical procedures. New York: Harper & Brothers.

Peters, Manspeaker, and Russek-Cohen (1986, Spring). Bringing the classroom to the farm [19 paragraphs]. Journal of Extension [On-line serial], 24(1). Available E-mail: almanac@joe.org. Message: send joe spring 1986 research 2.

Rasmussen, W.D. (1989). Taking the university to the people. Ames, IA: Iowa State Univ. Press.

Seevers, B., Graham, D., Gabon, J. & Conklin, N. (1997). Education through Cooperative Extension. Albany, NY: Delmar.

Smith-Lever Act as Amended in 1985. Public Law 99-198. 99th Congress. S 1435.

SPSS, Inc. (1988). SPSS-X user's guide (3rd ed.). Chicago: SPSS, Inc.

Steele, S.M. (1995, June). Looking for more than new knowledge [8 paragraphs]. Journal of Extension [On-line serial], 33(3). Available E-mail: almanac@joe.org. Message: send joe June 1995 ideas 3.

Session G Experiential Learning

March 23, 9:00 - 11:00 a. m.

Session Chair - Barbara Ludwig

Location: Maraval Room

TITLE: Revisiting Experiential Learning: Basis for Study Tours/Study Abroad Programs
AUTHOR: Larry E. Miller, Professor
The Ohio State University
DISCUSSANT: Arlen Etling

TITLE: Study Abroad Program as an Experiential, Capstone Activity: A Proposed Model
AUTHOR: Randall J. Andreasen, Chia-Hsing Wu
Iowa State University
DISCUSSANT: Arlen Etling

TITLE: Planning in Vocational Education for Agricultural Development in Lithuania
AUTHOR: William L. Thuemmel, O. Donald Meaders
University of Massachusetts, Michigan State University
DISCUSSANT: Peter Ewang

TITLE: Level of Involvement in Sustainable Agriculture Activities Among Agricultural Researchers in Venezuela
AUTHOR: Eduardo Delgado, Janet Henderson
The Ohio State University
DISCUSSANT: Peter Ewang

Revisiting Experiential Learning: Basis for Study Tours/Study Abroad Programs

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Abstract

Experiencing, alone, is not sufficient academic justification for study tours or study abroad programs. Such programs must be firmly entrenched in the philosophical and psychological tenets of teaching and learning. This paper should be viewed as an initial attempt to revisit those tenets to reaffirm our intent with programs: they are about student learning.

Introduction

Experiential learning is a real link, as I will try to show, between the classroom and the real world; i.e., between theory and practice, between abstract generalization and concrete instance, and between the affective and the cognitive domains of learning. The experiential concepts exist in cooperative education, internships, apprenticeships, attachment programs, clinical experiences, work-study programs, external laboratory, and studio arts. Members of AIAEE are often promoters of experiences in the international arena. AIAEE members often promote and develop study tours and study abroad programs or serve as hosts to such groups. Let us examine the philosophical base for such programs as they are often criticized by critics as safaris, excursions, trips or merely holiday outings.

Philosophical Bases

The concepts of experiential learning emerged from such great minds as John Dewey, Kurt Lewin, and Jean Piaget. L. S. Vygotsky, the noted Russian cognitive theorist, also made an important contribution when he defined learning from experience as the process whereby human development occurs, and this development perspective forms the basis for applications of experiential learning to education, work and adult development. Kolb (1984) noted that human beings are unique among all living organisms in that their primary adaptive specialization lies not in some particular physical form or skill or fit in an ecological niche, but rather in identification with the process of adaptation itself -- the process of learning. Humans benefit from experience; learn from it.

The "shrinking world", the rapid rate of change, and the exponential growth in knowledge necessitate that all of us must learn to survive. "If you are green, you are growing; if you are ripe, then you are ready to rot." This implies AIAEE members must all be green and growing, subject to continuing education, and lifelong learners. Tough (1977) noted that almost 90% of Americans will carry out at least one learning project each year and will spend at least 500 hours learning new things. Arbeiter et al.(1978) reported that the average American would change jobs at least seven times and careers three times during their lifetime. A 1980 study in the U.S. showed that 1¼ million quarter credit hours were awarded for prior learning experience. West Germany, Ireland and Australia also have extensive experiential learning programs.

We all need to be lifelong learners. Universities are recognizing that learning can occur outside the classroom. Knapp & Davis (1978) estimated that nearly 80% of the U. S. institutions of higher education had internship or other types of experiential learning opportunities. Therefore, experiential learning is not new, it is widely accepted, and it is widely practiced.

Drucker (1989) argued that schools are not adequately preparing students for the reality of work and that the inclusion of experiential learning programs would change the face of education both at the secondary and postsecondary level. Our nation is concerned with human resource development and the promotion of enterprise development and entrepreneurship.

Dewey (1938) stated that experience is the process that links education, work and personal development; and the greatest challenge to education will be the need to cope with change and lifelong learning. Stone & Wonser (1991) specified that learning takes place when (a) learners regard what they need to know as relevant to their lives, (b) they feel that their teachers are committed to their success, and (c) institutional environments allow for differences in learning methods and styles, and are in harmony with the diverse needs and interests of the learner. Do our study abroad programs meet these goals?

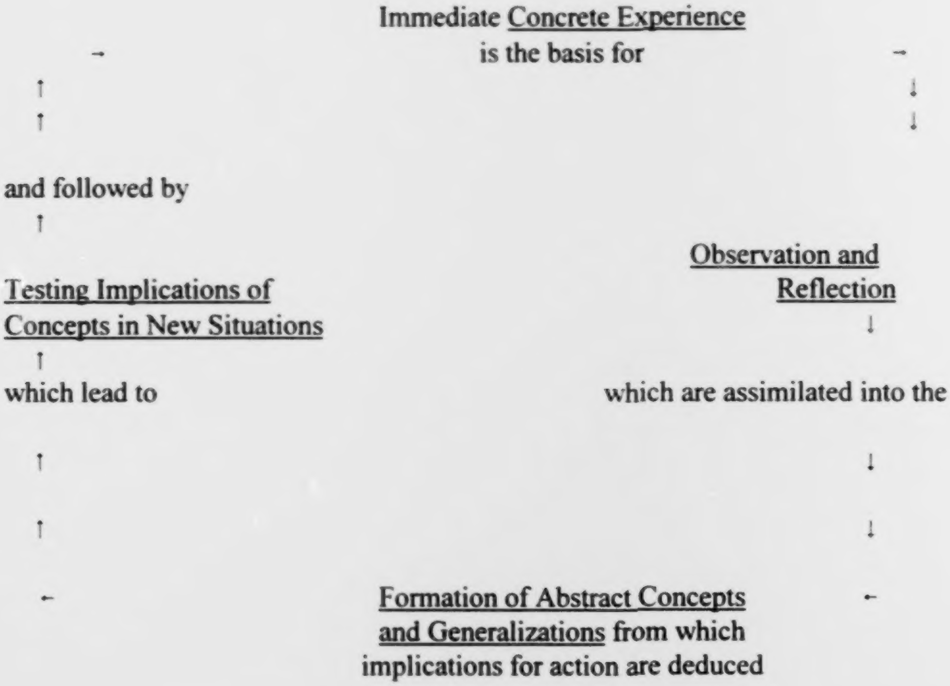
Participation in experiential learning opportunities should help students see the relevance, but teachers must be committed to helping students succeed and providing for individual differences. Faculty, further, must make clear to themselves the importance of the educational effort (Keeton, 1978), because if they are not committed to the concept that learning can occur experientially, then neither the students nor the hosts will likely have much faith that learning will occur.

Dewey's concepts have been further refined and expanded, principally by Kolb (1976). Kolb described the learning cycle, as shown in Figure 1, wherein "experience is translated into concepts which in turn are used as guides in the choice of new experiences" (p.2). He indicated that all four steps occur in sequence. The traditional academic setting obviously encourages a student to develop perceptual and symbolic abilities, by emphasizing reflective observation and concept formation. Do study abroad programs and study tours contain the same components?

One's, equally important, affective and behavioral abilities, however, can best be developed through active experimenting and concrete experience. Kolb's model provides a rationale for encouraging experiential learning as an essential part of the learning process. Teaching is done to bring about learning. Learning is changing behavior. "Teaching is more than telling", if it is to bring about learning. His model would also caution us against assuming that any experience will lead to learning in the absence of the other steps. Thus, what are the learning objectives of our study abroad programs? Are they simply to "experience"? Are they simply to create an "appreciation for" or do we have higher level cognitive functions in mind? This author would argue that we must have high aspiration for academic credit programs.

Only experience that is reflected upon, seriously, will yield its full measure of learning and the reflection must in turn aim at testing the newly refined understandings by further experience. Our duty, as educators, is to provide *experiential* opportunities and to make sure they produce *learning*. That is, we must provide the framework for regularly analyzing the experience and forming new concepts and theories, and submitting these concepts to the test of experience. AIAEE members should assure that true reflection occurs. We are not just to provide disjointed experience through experiential learning opportunities. We must structure the program to enhance the opportunity for learning to occur!

Figure 1. The Learning Cycle



Immediate Concrete Experience
is the basis for

and followed by

Observation and
Reflection

Testing Implications of
Concepts in New Situations

which lead to

which are assimilated into the

Formation of Abstract Concepts
and Generalizations from which
implications for action are deduced

While Kolb provided the "why" rationale, Argyris and Schön (1974) examined the "how" in their analytic study of graduate-level professional education. In describing successful field experiences, they drew conclusions surprisingly similar to Kolb's description of the learning cycle. "The objective of the field experience", they found, "is to learn to become reflective under real-time conditions, so that effective *ad hoc* theories of action can be created and tested". Their "theory of action" is not simply a theory about the technical subject or field under study, but is the learner's framework for engaging in the experience. It is not just the theory about the study subject, but also the informal ideas, assumptions and expectations the student brings from past experience as well as the methods they use to function in the new situation. Therefore, the word "theory", here, is used much more broadly than in the usual sense. From cognitive psychology, we could say that all learners bring an existing cognitive structure to the learning situation, and they must make sense out of the new learning relative to the old -- make it fit. Thus, one's *espoused* theory and one's *theory-in-use* becomes tested and a part of the structure. In this manner, Argyris and Schön indicated, field experience simultaneously enhances the learner's theoretical knowledge of the field, the process skills in the field, and the ability to monitor and change one's own behavior.

The socio-emotional development of the individual participant in experiential learning programs has been supported by such scholars as Carl Jung, Erik Erikson (psychoanalysis) Carl Rogers (client-centered therapy), Fritz Perls (gestalt therapy), and self-actualization psychology from Abraham Maslow. Their ideas of adaptation add credence to the central role of the individual assimilating the experience. A second contribution is of "healthy adaptation" through effective integration of cognitive and affective processes.

The writings of the Brazilian philosopher, Paulo Freire, also support experiential principles. He is concerned with creating, what he calls, "critical consciousness", wherein he encourages examining abstract concepts by the creation of personal, experiential learning through dialogue with equals. He and Ivan Illich see traditional education as a means of social control and wish to return the power to the people. Therefore, even some of the radical educators support the concepts of experiential learning.

Practical Implications

While only a brief overview of the philosophical tenets have been presented, one would hope that the AIAEE members can see that there are, indeed, philosophical and theoretical bases for the provision of experiential learning experiences. These can, indeed, be labeled as study abroad programs or study tour programs. One can see that the models of Kolb and Argyris and Schön essentially overlap. However, the overlapped model should not be viewed as a "universal solvent" for learning. A curriculum and a course of study have several parts and all may be essential to producing a learned individual. What emerges is that each student must "learn how to learn". They will need to learn again and again throughout their lifetime. Teaching is "lighting a light, not filling a basket". The learning situation should place the learners in a position of directing and leading their own learning and problem solving, enhance their capacity to be independent learners, to look to their own resources for interpretation and for finding out rather than developing a dependency on an external expert who will not be present when learners confront challenges for which their education has supposedly prepared them (Thomas & Anderson, 1991).

Are you an animal scientist, an agricultural economist, an agricultural mechanic, a home economist, an extension specialist; an agronomist? One could argue that if you are a teacher, or professor, then your primary profession is that of an educator. You must have as much concern about teaching and learning as your technical content. The greatest legacy you can leave to your students is the ability to continue learning. All AIAEE members have a responsibility in this regard that, I would perceive, has been warmly accepted.

Some have likened traditional classroom education to the industrial model. Oakes (1986) described the traditional metaphor of educational design as industrial, wherein the business of learning is additive and largely controlled by people and events outside the learner, the objectives define what the end product of learning will be, and the learner is the recipient: moving through an assembly line of classrooms (learning experiences) in which the teacher's role is essentially to give information (telling) in chunks that are keyed to the objectives. The new metaphor (model) is that the essence of successful learning is internal to the individual, and Anderson et al. (1985) suggest a shift away from low level basic skills and isolated facts to higher-order abilities such as analysis, reflection, and reasoning (Perkins & Salomon, 1989).

True understanding and learning how to learn are essential constructs to the preparation of an educated person. "Wisdom cannot be told". People make sense of things by constructing meanings. Over time, people develop repertoires of such constructed meanings known as knowledge structures. Because people's knowledge structures influence what is noticed and attended to by them, and interpretations of experiences, prior knowledge influences new learnings. Unless they are given assistance in constructing new structures, old structures are likely to continue to guide thinking and actions and new learnings are likely to remain inert (Thomas & Englund, 1990). Such structures that do not include a global awareness will essentially inhibit current students who will exist in the future global economy and smaller world.

Rumelhart and Norman (1978) suggested that these new structures can be changed as: (1) new elements are added to old structures but the old organization remains intact, (2) new linkages are formed creating larger "chunks" in the knowledge structure; (3) new organizations occur which organize and embed previous structures within new structures that have more encompassing elements in their organizational centers.

Our job as teachers entails not only imparting new information, "telling", but helping the learner to create new structures. Experiential learning can provide solid structures within the mind of the individual. People, thus, learn to compile knowledge in ways which make it applicable to differing situations (Anderson, 1985). They can transfer your teaching to situations later in life when they need it. They will more nearly be able to be "wise", successful entrepreneurs, critical thinkers, decision makers, and problem solvers. AIAEE members need to ascertain the nature of the current structure of students, aid in making the necessary linkages for new "chunks" to be added and nest all this in entirely new structures.

Much of what you and I teach this year could be out-of-date by the end of the century. In helping the student learn to learn, however, we will leave a legacy of learning for the future: like an open window through which they can continue to draw breaths of fresh air throughout their lifetime.

Experiential learning programs typically include in-classroom components and the field components, which are jointly and cooperatively supervised by school and work site personnel (Pataniczek & Johansen, 1983). Students, hosts and school representatives usually enter into formal arrangements that spell out the nature of the relationships and various responsibilities required of each party. However, one cannot assume that such programs automatically promote significant learning (Stone & Wonser, 1991). Learning does not occur automatically.

To ensure that learning occurs, Mulcahy (1984) urged educators to incorporate the basic philosophies of experiential education into their programs. Macala (1986) expanded this argument by suggesting that such programs be designed to broaden intellectual, social, and political awareness through the experiencing of ideas and self in real-world settings. These programs should also provide opportunities for career exploration and the development of useful and marketable skills. Internationalization will certainly be among those skills needed in the future.

If the goal of educating a learned individual is to be achieved, simultaneous change in the classroom which provides for higher level cognition should occur which coincides with the experiential programs. For "reflection" to occur, a seminar is often included concurrently with the experiential program to provide the opportunity for reflection. If properly guided, students infer and conclude certain "truths" (add to their existing structures) from their experience. Reflection can also occur in the field through activities where students are monitored and receive feedback on their performance and thinking; permitting reconstruction of problems and designing new approaches (Moore, 1983).

Conclusions

Many other advantages also are inherent with providing experiential learning. Unique training is often more readily available at international sites than in home educational institutions. Eventually, the benefit to universities is that experience-based educational programs are cost-effective ways to train future graduates who possess a global awareness (Macala, 1986).

"Why have experiential learning programs?" The answer is simple: to promote real learning by students. It is not just a travel experience for the sake of experience, but a way to provide a "connectedness" between theory and practice.

References

Anderson, J. R. (1985) Cognitive psychology and its implications. New York: Freeman.

Arbeiter, S., Asianian, C. B., Schnerbaur, F. A. & Brickell, H. M. 40 Million Americans in Career Transitions: The Need for Information. New York: College Entrance Exam Board.

Argyris, C. & Schön, D. (1974) Theory into Practice: Increasing Professional Effectiveness. San Francisco: Jossey-Bass.

Dewey, J. Experience and Education. New York: Collier Books.

Drucker, P. F. (1989, May) How schools must change. Psychology Today, (19-22)

Keeton, M & Tate, P, Eds. (1978) Learning by experience -- What, Why, How. San Francisco: Jossey-Bass.

Knapp, J. & Davis, L. (1978) Scope and variety of experiential learning. In Keeton & Tate (Eds). Learning by experience -- What, Why, How. San Francisco: Jossey-Bass.

Kolb, D. A. (1984) Experiential Learning: Experience as the source of learning and development. Englewood Cliffs, NJ: Prentice-Hall.

Kolb, D. A. (1976) Learning Styles Inventory: Technical Manual. Boston: McBer & Co.

Macala, J. C. (1986) Sponsored experiential programs: Learning by doing in the workplace. In L. H. Lewis (ed.) Experiential and Simulation Techniques for Teaching Adults. (57-69). San Francisco: Jossey-Bass.

Moore, D. T. (1983) Perspectives on learning in internships. Journal of Experiential Education, 6, (2).

Mulcahy, K. F. (1984) Experiential learning theory and cooperative education: A case study. Studies in Education Evaluation, 10, 39-48.

Oakes, J. (1986, September) Keeping track. Phi Delta Kappan, 68, (1), 12-17.

Pataniczek, D. & Johansen, C. (1983) An introduction to internship education. Journal of Experiential Education, 8.

Perkins, D. N. & Salomon, G. (1989) Are cognitive skills context-bound? Educational Researcher, 16-25.

Rumelhart, D. E. & Norman, D. A. (1978) Accretion, tuning and restructuring: Three modes of learning. In J. W. Cotton & R. L. Klatzky (Eds.), Semantic factors in cognition (37-53), Hillsdale, NJ: Erlbaum.

Thomas, R. G. & Anderson, L. (1991) "Teaching for Transfer: Application of Cognitive Theory to Vocational Education", Paper presented to the Research Section of the American Vocational Association, December.

Thomas, R. G. & Englund, M. (1990) Instructional Design for Facilitating Higher Order Thinking, Vol. II: Instructional Design Model, Minnesota Research and Development Center for Vocational Education, University of Minnesota, St. Paul.

Stone, J. R. & Wonser, R. (1991, Fall) "An experiential education perspective on vocational education, Journal of Vocational and Technical Education, 8, (1) 3-24.

Tough, A. (1977) Learning Efforts: Recent Research and Future Directions. Toronto: Ontario Institute for Studies in Education.

STUDY ABROAD PROGRAM AS AN EXPERIENTIAL, CAPSTONE ACTIVITY: A PROPOSED MODEL

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STUDY ABROAD PROGRAM AS AN EXPERIENTIAL, CAPSTONE COURSE: A PROPOSED MODEL

Introduction/Theoretical Framework

Educational reform in the United States is a constant, on-going process. New ideas and models are constantly espoused which are intended to dramatically improve education. One of these "new" ideas involves experiential learning. The ability to involve one's self in specific experiences, to reflect and conceptualize these experiences, and then to take an active role in experimenting and building upon them, is the foundation of experiential learning (Kolb, 1984; Joplin, 1981).

Experiential learning, as well as problem-solving and decision-making abilities, has continually been touted as an essential element in the education process (SCANS Report for America 2000, 1991). The basic theme among all experiential learning models is that learning through applicable experiences, with requisite reflection and synthesis, provides for the best education (Kolb, 1984; Joplin, 1981). And, it is this experiential learning model which provides the backbone for a capstone course. The course provides a culminating experience, which needs to be carefully monitored so students achieve their stated objectives (Knowles & Hoefler, 1995; Aupperle & Sarhan, 1995).

Experiential learning, which has been shown to be an integral part of capstone programs (Andreasen, 1998), is equally integral to study abroad programs. Empire State College, for example, had incorporated the experiential and capstone concepts into their Principles of International Business Course. Students, who were provided the opportunity to participate in a study abroad program, could learn crucial international business concepts, skills, and other related learning which were being unmet in the students' other courses (Herdendorf, 1991).

Purpose and Objectives

The purpose of this study was to develop a model for incorporating experiential learning into capstone courses and a rationale for the inclusion of study abroad programs into this course description. Specific objectives were:

1. Identify and define components of a capstone course.
2. Define study abroad programs as capstone.
3. Develop a model for incorporating experiential learning into capstone courses.

Methods/Procedures

This study employed a historical research methodology. This method is a systematic collection and evaluation of data to describe, explain, and thereby understand actions/events that occurred in the past (Fraenkel & Wallen, 1993).

Findings

Objective 1: Identify and define components of a capstone course.

In 1985, the Association of American Colleges (AAC) published its report entitled *Integrity in the College Curriculum: A Report to the Academic Community.* This report addressed concerns about the decay in the quality of the Nation's Colleges and Universities. The findings support a minimum required curriculum which should include the following items: inquiry, literacy, understanding numerical data, historical consciousness, science, values, art, international and multi cultural experiences, and, study in depth. The study in depth area noted the following: a central core of theory and method, a range of topics, a sequence with advancing sophistication, and a means by which final mastery of a discipline's complexity can be shown and assessed (Wagenaar, 1993). This description forms the basis of what is a capstone course.

In a recent study of capstone courses by Crunkilton, Cepica, and Fluker (1997), the authors offer the following definition of a capstone course: "A planned learning experience requiring students to synthesize previously learned subject matter content and to integrate new information into their knowledge base for solving simulated or real world problems." Crunkilton et al. (1997) go on to state that a capstone course should "...ease the transition of students between their academic experiences and entry into a career or further study." The course provides a culminating experience that needs to be carefully monitored so that students achieve their stated objectives (Aupperle & Sarhan, 1995; Knowles & Hoefler, 1995).

Six educational outcomes and five required learning activities were identified by Crunkilton et al. (1997). The expected educational outcomes of a capstone course include: problem solving; decision making; critical thinking; collaborative/professional relationships; oral communications; and written communications. Required learning activities include: projects, case studies, or written analyses, small group work, oral communication, intensive writing, and industry involvement. These outcomes and activities have been reiterated throughout the literature involving capstone courses (Zimmerman, 1997; Crunkilton et al., 1997; Aupperle & Sarhan, 1995; Wagenaar, 1993; Zimmerman, 1991).

Objective 2: Define study abroad programs as capstone.

In order for a study abroad program to be considered a capstone course or program it must be held up to the "light" of the characteristics of said program or course. Wagenaar (1993) make the following comments with regards to the competencies required in a capstone course:

> The capstone course revisits these basics; it asks students to interconnect them, to assess which aspects really are the most basic, to compare the basic questions…with the basic questions from other disciplines, to determine how their exposure… contributed to their liberal education and to their critical thinking capacities, to state how their exposure…has affected their values and their views of life, to explicitly link knowledge gained from one course with that gained in another, and to participate competently in a discussion of the basic arguments in the field. (p.211)

In a 1990 study published by the European Cultural Foundation, several academic effects of study abroad programs are listed. Among these were: tackling abstract problems, working with theories, articulating thoughts/views, cooperating with others, motivating other people, planning and following through, developing comparative perspectives (Opper, Teichler, and Carlson, 1990).

Experiential learning, which has been shown to be an integral part of capstone programs (Andreasen, 1998), is equally integral to study abroad programs. Mortensen (1978) states that experiential learning is conceptually linked to a great variety of activities that take place outside of the traditional classroom chiefly, internships, independent study projects and study-abroad programs. Empire State College incorporated the experiential and capstone concepts into their Principles of International Business Course. Students were provided the opportunity to participate in a study abroad program so that their students could learn crucial international business concepts, skills, and other related learning which were being unmet in the students other courses (Herdendorf, 1991). These related learning activities involved intense student-professor contact, student-student interactions, written and oral communications, and stimulating educational experiences.

Objective 3: Develop a model for incorporating experiential learning into capstone courses.

Based on the review of literature and researcher observations, a model for integrating experiential learning processes into capstone courses was developed (Andreasen, 1998). This model (MIELCC, figure 2) draws upon the research and observations of educators in diverse fields of expertise but is oriented toward capstone courses in Colleges of Agriculture, although the benefits and applications of experiential learning and capstone course are universal.

Crunkilton et al. (1997) stated that one of the principal values of capstone course is to unify the fragmented disciplinary knowledge associated with the educative process. This model begins with this principle in mind. Crunkilton et al. further suggested five essential learning activities based upon their nation-wide analysis of capstone courses in Colleges of Agriculture. These activities are: problem solving, team work, decision-making, critical thinking, and oral and written communication.

The learning activities and instructional techniques included in the model's required capstone components are also the activities and techniques rated by students as being of exceptional quality and the most beneficial to them professionally (Andreasen, 1998). These learning activities and instructional techniques facilitate the experiential process within the capstone course.

David Kolb (1984), in his book *Experiential Learning: Experience as the Source of Learning and Development,* summarizes seven themes which provide the theoretical framework for experiential learning. Kolb draws upon the works of Kurt Lewin, John Dewey, and Jean Piaget in forming guiding principles of experiential learning theory (Figure 1).

Lewin's work with T-groups and action research articulate with John Dewey's work concerning the democratic values guiding experiential learning as well as the view of experiential learning as a life-long process. These views work in concert with Piaget's contributions of the learning process as dialectic between assimilating experience into concepts and accommodating concepts to experience. Dewey's unique works with pragmatism as well as Piaget's epistemology round out the themes for the principles of experiential theory.

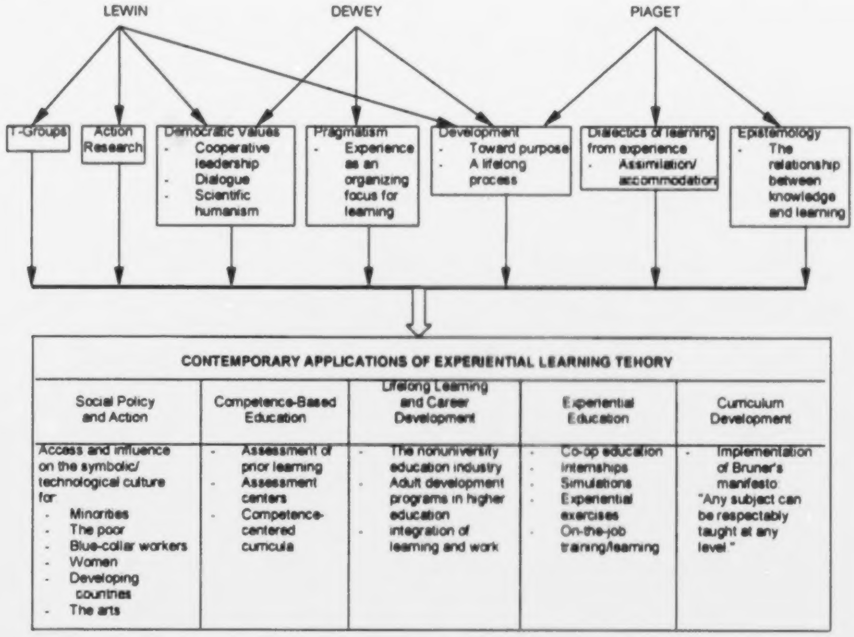
LEWIN
DEWEY
PIAGET
T-Groups
Action Research
Democratic Values
- Cooperative leadership
- Dialogue
- Scientific humanism
Pragmatism
- Experience as an organizing focus for learning
Development
- Toward purpose
- A lifelong process
Dialectics of learning from experience
- Assimilation/ accommodation
Epistemology
- The relationship between knowledge and learning
CONTEMPORARY APPLICATIONS OF EXPERIENTIAL LEARNING TEHORY
Social Policy and Action
Access and influence on the symbolic/ technological culture for:
- Minorities
- The poor
- Blue-collar workers
- Women
- Developing countries
- The arts
Competence-Based Education
- Assessment of prior learning
- Assessment centers
- Competence-centered curricula
Lifelong Learning and Career Development
- The nonuniversity education industry
- Adult development programs in higher education
- integration of learning and work
Experiential Education
- Co-op education
- internships
- Simulations
- Experiential exercises
- On-the-job training/learning
Curriculum Development
- Implementation of Bruner's manifesto
"Any subject can be respectably taught at any level."

Figure 1. Guiding themes for experiential learning (Kolb, 1984)

Currently there are many models of experiential learning. Most of these models are very similar. However, they all can be directly related to the traditional theories of Lewin, Dewey, and Piaget. The Lewinian model, a four-stage cycle, flows from a concrete experience through observation and reflections to the formation of abstract concepts and generalizations which can then be synthesized into new individualized theories and tested for applicability and then formulated into new concrete experiences and the cycle repeated.

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The Piaget model builds onto the concepts presented by Kurt Lewin. Lewin believed that the learning process was a cyclical interaction between the individual learner and his/her environment. Lewin proposed that the key to learning lies in the interaction between accommodating and assimilating experiences into higher levels of cognitive functioning.

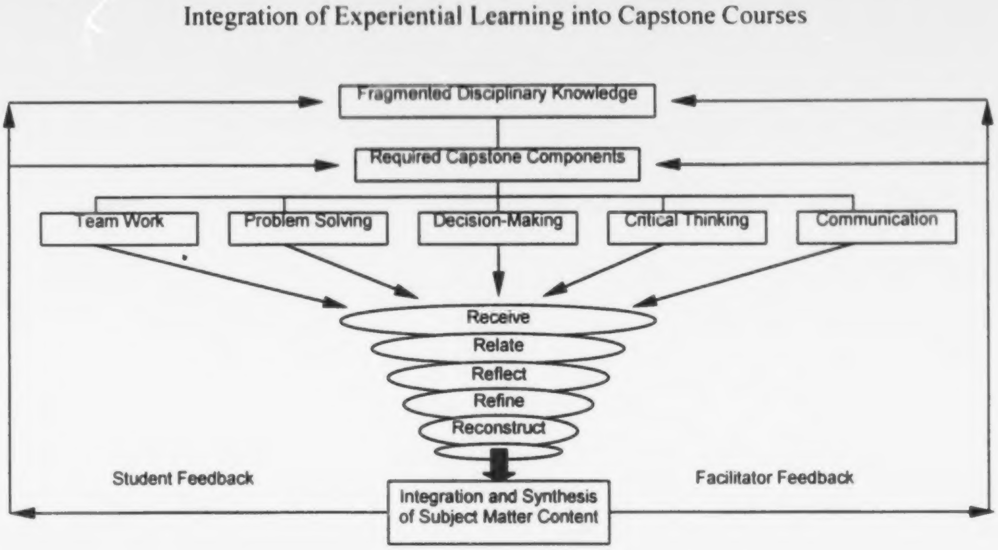
Integration of Experiential Learning into Capstone Courses
Fragmented Disciplinary Knowledge
Required Capstone Components
Team Work
Problem Solving
Decision-Making
Critical Thinking
Communication
Receive
Relate
Reflect
Refine
Reconstruct
Student Feedback
Facilitator Feedback
Integration and Synthesis of Subject Matter Content

Figure 2. Model for the Integration of Experiential Learning into Capstone Courses (MIELCC)

The interpretation these models and there incorporation into the capstone course concept are the product of this study and the synthesis of literature. The five "R's" of the model (receive, relate, reflect, refine, and reconstruct) are a mnemonic device to represent the major areas of the experiential learning model. They are designed to spiral and funnel the required capstone components into an integration of the subject matter content so that they may become applicable and synthesized by the learner.

Receive: An activity or experienced is received by the learner. This activity or experience may be contrived by the facilitator or may occur spontaneously during the capstone course or may have occurred during previous courses. This step corresponds with previously cited models, many of them using the term "concrete experience" (Lewin, Piaget, Kolb, & CSREES).

Relate: Relating learned experiences to previously gained knowledge ties experiential learning into the capstone course philosophy. Taking fragmented disciplinary knowledge and unifying it is the intent of this step. This step may be referred to as "focus," "internalized reflection," reflective observation," "share," or "processing" in other models and is associated with reflect.

Reflect: Laura Joplin stated, "True experiential education is characterized by systematic interventions of the learning facilitator with the learner along an experiential path" (Joplin, 1981, p. 156). It is the reflecting upon the experiences received and relating them that distinguishes experiential learning from learning through experiences.

Refine: Once knowledge has been related to and reflected on it must be refined. This refinement process causes further contemplation concerning the applicability of this knowledge and its association to and with other knowledge. This may be associated with "abstract conceptualization" and "generalize" from other experiential leaning models.

Reconstruct: As the vortex of the spiral is reached, experiential learning reconstructs or allows for the synthesis of the subject matter content and its integration into our knowledge base. The Lewinian model calls this step "testing the implications of concepts in new situations" and the CSREES models refers to reconstruct as "apply what was learned to a similar or different situation or practice." Once synthesis and integration have resulted, the spiral of the five R's can be reused and additional knowledge processed and feedback provided and evaluations made to improve and develop the initial process.

Conclusions/Recommendations/Implications

There is a very real need to relate the concepts of capstone courses and experiential learning. Without this relationship the possibility exists of lessening the educational advantage students have by participating in capstone courses. Without an understanding of the experiential learning process, the surface of knowledge and learning are only scratched. The results of this study show that when learning activities and instructional techniques based upon the principles of experiential learning are applied in the capstone setting, the quality and benefits within these courses are improved.

Utilization of the Model for Integration of Experiential Learning into Capstone Courses (MIELCC, figure 2) provides an actualization of the relationship between and among these educational principles. The Model provides one method of viewing these principles and incorporating them into a more holistic approach to education. Following the experiential learning process depicted in the five R's allows for improvements in education by improving the application and conceptualization of knowledge.

The alternative to ignoring these concepts, principles, and this model is to underutilize the tools and opportunities available to educators. Adherence to them is to improve education and learning for our students.

References

Andreasen, R. J. (1998). *Perceived benefits of selected experiential learning activities and quality of instructional techniques in a college of agriculture capstone course*. Unpublished doctoral dissertation, Iowa State University, Ames, IA.

Association of American Colleges. (1985). *Integrity in the college curriculum: A report to the academic community.* Washington, DC: Association of American Colleges.

Aupperle, K. E., & Sarhan, M. H. (1995). Assessing financial performance in the capstone, strategic management course: A proposed template. *Journal of Education for Business, 71*(2), 72-81.

Crunkilton, J. R., Cepica, M. J., & Fluker, P. L. (1997). *Portfolio of capstone courses in colleges of agriculture.* (USDA award # 94-38411-016). Washington, DC: U.S. Department of Agriculture.

CSREES. (1992). *Curriculum development for issues programming: A national handbook for extension youth development professionals.* CSREES, Washington, DC: U.S. Department of Agriculture.

Dewey, J. (1936). *Experience and education.* New York, NY: Collier.

Fraenkel, J. R. & Wallen, N.E. (1993). *How to design and evaluate research in education.* New York, NY: McGraw-Hill Inc.

Herdendorf, P.S. (1991). Principles of International Business: An Experiential Learning Course. *Paper presented at the annual Eastern Michigan University Conference on Languages and Communication for World Business and the Professions.* Ypsilanti, WI.

Joplin, L. (1981). On defining experiential education. *Journal of Experiential Education, 4*(1), 155-158.

Knowles, J. G., & Hoefler, V. B. (1995). The student teacher who wouldn't go away: Learning from failure. In R. J. Kraft & J. Kielsmeier (Eds), *Experiential learning in schools and higher education.* Boulder, CO: Kendall/Hall.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development.* Englewood Cliffs, NJ: Prentice-Hall, Inc.

Lewin, K. (1951). *Field theory in social sciences.* New York, NY: Harper & Row.

Mortensen, E. (1978). Experiential Learning-Scandinavian Style. *International Education and Cultural Exchange, 14(1),* 36-41.

National Council for Agricultural Education. (1996). *Reinventing agricultural education for the year 2020.* Alexandria, VA.

Opper, S., Teichler, U., & Carlson, J. (1990). *Impacts of Study Abroad Programmes on Students and Graduates.* London, England: European Cultural Foundation.

Piaget, J. (1971). *Psychology and epistemology.* Middlesex, England: Penguin Books.

SCANS Report for America 2000. (1991). *What work requires of schools.* U.S. Department of Labor, Washington, DC.

Wagenaar, T. C. (1993). The capstone course. *Teaching Sociology, 21*(3), 209-214.

Zimmerman, A. P. (1991). A capstone problem solving/systems course at a two-year technical college. *NACTA Journal, 35*(1), 26-29.

Zimmerman, A. P. (1997). A capstone problem solving course revisited. *NACTA Journal, 42*(3), 41-46.

PLANNING IN VOCATIONAL EDUCATION FOR AGRICULTURAL DEVELOPMENT IN LITHUANIA

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ABSTRACT

This is a study of vocational education in agriculture in Lithuania since 1991, with a focus on observations by APPLE-sponsored U.S. agricultural educators who have been involved in planning and development activities in the Baltic state during the past three years. The purpose of the paper is to provide background information about agricultural education, its support from APPLE and its current status, and to present some recommendations to government ministries for developing long-range strategies and exploring ideas for future in-service workshops and other professional development activities for Lithuanian agricultural educators. Information and data were obtained by personal interviews, observations while conducting summer workshops for teachers in Lithuania, reviews of Lithuanian documents printed in English, and research conducted during summer in-service seminars in Lithuania. Some major leadership and planning challenges in vocational education for agricultural development include program evaluation, teacher education, curriculum revision, assuring adequate resources at the school/college levels, improved legislative and budgetary cooperation and coordination between the Ministry of Agriculture and Forestry and the Ministry of Education and Science.

Introduction

APPLE, educational planning, and vocational education in agriculture have been linked together since 1996 to further agricultural development in Lithuania. Summer in-service seminars have been conducted for each of the past three years for teachers and administrators in selected vocational agriculture schools from across the Baltic state. These typically two-week workshops have been sponsored by the American Professional Partnership for Lithuanian Education (APPLE) in cooperation with the Ministry of Agriculture and Forestry (MOAF) and the Ministry of Education and Science (MOES). A total of six U.S. agricultural educators have participated in one or more of these annual seminars. Survey research has been conducted by the visiting agricultural educators and those findings have seen shared with ministry officials (Connors & Brousseau, 1996, 1997; Thuemmel, Meaders, Mannebach, & Brousseau, 1998; and Edwards, Meaders, & Brousseau, 1999). Those results, plus a shared concern to improve the effectiveness of agricultural education in Lithuania, led to the invitation of two U.S. agricultural educators to travel to Lithuania in March 1998 for the purpose of assisting governmental and private agencies in the planning of future technical assistance efforts in agricultural education.

Purpose of the Study

The major purpose of this paper is to provide an overview of vocational education in agriculture in Lithuania since 1991, when the nation regained its independence with the breakup of the Soviet Union. Included is background information about agricultural education in Lithuania, its support from APPLE, some selected observations regarding its current status, and an exploration of ideas for future projects and technical assistance efforts between the U.S. and Lithuania.

Methods and Data Sources

This paper was developed primarily from information obtained through personal interviews by the authors during their technical assistance visit to Lithuania in March 1998 and from observations while conducting APPLE-sponsored summer workshops in Lithuania (Meaders, 1996, 1997, and 1998; Thuemmel, 1997). This information was augmented by data from current Lithuanian documents printed in English, reviews of previous research conducted during APPLE-sponsored summer seminars, discussion papers, and related communications with ministry officials and non-governmental organization representatives in Lithuania.

Findings and Discussion

Agricultural Education Today--An Overview

Lithuania has an existing network of approximately 41 secondary agricultural (vocational) high schools, 11 agricultural colleges (postsecondary technical schools), and two agricultural universities (Lithuanian Agricultural University and Lithuanian Academy of Veterinary Studies, both in Kaunas) along with eight agricultural research institutes (Štuikys & Ladyga, pp. 134-139). This network provides a foundation for many potentially positive developments in agricultural education. In addition, an agricultural extension service, known as the Lithuanian Agricultural Advisory Service, was established in 1993. This organization is patterned after the European Union-compatible Danish model, "but adapted to Lithuanian needs" (Csaki, Meyers, & Kazlauskiene, 1997, p. 24). Today, it provides consultative service to farmers in all 44 regional centers.

The secondary agricultural high schools and postsecondary (higher) agricultural schools or colleges are under the administration of the MOAF with curricular coordination through the Ministry of Education and Science (MOES). Recent reports indicate that administrative responsibility may be shifted soon to the MOES. The two agricultural universities, all except one of the agricultural research institutes, and the Agricultural Advisory Service operate independently from the Ministry of Agriculture and Forestry (MOAF) (Csaki et al., 1997, p. 24).

Considerable educational reform has occurred in Lithuania since the Baltic state regained its independence. According to the first sentence of the nation's statutes on education (adopted in 1991), " 'Education is a priority development area of the Republic of Lithuania supported by the State.' The law legitimates vocational education and training as one of the constituent parts of the education system" (National Observatory of Lithuania, 1997, *The VET [vocational education and training] system in Lithuania*, p. 24). In 1996, there were 105 vocational schools in Lithuania offering programs of study in 14 different job families. Approximately 41 of these schools offered programs in the job family of "Agriculture, forestry, fishing, food processing"; i.e., were classified as vocational agriculture schools. These schools enroll students from ages 14 to 20 for two to four years, depending on their stage of training and development. With the decision to move to a market economy in 1991, a four-stage system of vocational education and training was introduced to meet the needs of both youth and the labor market (National Observatory, 1997, *The VET*, pp. 24-30).

Teachers in Lithuania are prepared initially in pedagogical colleges and universities, which are licensed to train teachers by the Ministry of Education and Science (MOES). Teachers are also prepared by appropriate faculties of several other universities, including the Lithuanian Agricultural University at Kaunas. There are four levels of teacher preparation: Level I--studies at a pedagogical college; Level II--studies at a university (to receive a baccalaureate degree); Level III--master's studies; and Level IV--doctoral studies (Jackūnas, 1996, p. 27). Teacher certification must be renewed every five years (National Observatory in Lithuania, 1997, *VET-related laws*, p. 12).

Nearly all agricultural teachers in Lithuania have a baccalaureate degree and most have completed their agricultural teacher education studies in the Department of Professional Pedagogics and Psychology, Lithuanian Agricultural University. According to Dr. Rima Adamoniene, Associate Professor and Department Head (personal communication, March 18, 1998), the department was established in 1985 and, in 1998, had 10.5 full-time faculty positions--8 on the main campus in Kaunas and 2.5 located at other universities. The department provides instruction in the behavioral sciences for all undergraduates at the Agricultural University, offers a master's degree of Professional *Educology* (Education + Psychology) to post-baccalaureate students and occupational teachers, and prepares teachers and lecturers of agricultural schools for certification by the MOES. The university has six other departments--Agriculture, Economics, Electrical Engineering, Forestry, Mechanical Engineering, and Water Resources (including Land Management).

APPLE and Agricultural Education

The American Professional Partnership for Lithuania Education (APPLE) was founded in 1991, according to V. Vebra, Executive Director, APPLE, to:

> aid in the reform of Lithuanian education following many years of Soviet rule. Creativity, critical thinking, problem solving, respect for individual differences and many other

> hallmarks of a democratic system of education were the elements which were discouraged and stifled during those years. Through summer seminars and other projects A.P.P.L.E. has brought scores of American educators and their ideas to Lithuania and we are proud that the results are quite apparent (personal communication, March 6, 1997).

APPLE is a private, nonprofit, voluntary organization that draws primarily on the Lithuania-American community. It enjoys a modest funding base to support its bilateral teacher development activities. It works closely with the Lithuanian MOES and the Teachers' In-Service Training Institute in Vilnius.

During the summer of 1996, APPLE, in cooperation with MOES and MOAF, sponsored its first in-service workshop (called *strand*) for agricultural teachers. APPLE organizes its specialized instructional units (e.g., elementary education, special education, administration) by strand. Approximately 30 teachers from vocational agriculture schools from the Molėtai area of eastern Lithuania participated in a two-week agriculture education strand program, which was conducted at the Alanta Agricultural School by three professional agricultural educators from the United States. Although this was only the first in-service program for agricultural teachers, it was the sixth year for APPLE-sponsored in-service programs for Lithuanian teachers (see Connors & Brousseau, 1997, pp. 22-23, 25, for further details about this first workshop).

The first agricultural education in-service seminar was well received by the Lithuanian teachers. Especially appreciated was the U.S. agricultural educators' enthusiasm for such topics as enhancing student achievement through problem-solving skills, entrepreneurship, and leadership development--all essential concepts and competency areas for a people adjusting to a market-driven economy and democratic political system after 50 years of Soviet centralized planning and control. Subsequently, APPLE has included an agricultural education strand in its summer in-service workshops for Lithuanian teachers ever since 1996. The 1997 agricultural strand was conducted in July at the Tauragė Agricultural and Mechanical Technology School (located in southwestern Lithuania) and, in July 1998, a one-week workshop was held at the Kaunas Agricultural College, followed by a two-week agricultural education strand workshop that was part of the APPLE program at the academic high school in Utena. Furthermore, two one-week agricultural education strand workshops are being planned for summer of 1999.

While in Lithuania to conduct the agricultural education strand workshop during July 1997, the authors were approached by ministry (both MOES and MOAF) and APPLE representatives for assistance with strategic planning in agricultural education so that the limited resources available for the professional development of Lithuanian agricultural teachers could be best utilized. This need for planning assistance was echoed by teachers and administrators who attended the first two agricultural education strand workshops. APPLE recognized the significance of agriculture to the economy and society of Lithuania, and the importance of agricultural education for preparing youth for agricultural careers. APPLE also wanted to build on, and extend, its experiences with the seminars for teachers and administrators of agricultural schools that were conducted in Alanta (1996) and Tauragė (1997). Also, to prepare for the 1998 agricultural education strand seminars and beyond, so that those U.S. teaching approaches perceived as being very relevant to Lithuania's present circumstances could be presented most effectively. It was noted that APPLE's 1996 team of volunteer specialists in agricultural education had the benefit of some guidelines from the Ministry of Agriculture and Forestry. Those guidelines provided information, which helped to set priorities for the instruction that was planned, and supported several of the positive programs already implemented by both MOAF and MOES (V. Vebra, personal communication, January 29, 1998).

The Planning Visit

An invitation from APPLE for a 10-day planning visit, with in-country support by both ministries, was extended to, and accepted by, the authors. During the March 1998 visit, the APPLE team (Meaders, Thuemmel, and in-country support personnel) had the following objectives:

1. To meet with officials in the ministries of education and agriculture to discuss current Lithuanian programs for strengthening agricultural education; and to present curricular suggestions for the proposed 1998 APPLE seminar for teachers and administrators from agricultural schools.
2. To identify priority criteria for invitations to participants (teachers and administrators) for the 1998 agricultural education strand seminar.
    a. Teacher specialities (agronomy, animal husbandry, agricultural machinery, other).
    b. Administrators (Coordinators of Student Practice, School Farm Directors, Curriculum Directors, other)
    c. Selection of host school(s) for the seminar and their role in hosting the seminar.
3. To clarify the roles of the ministries (education and agriculture) in organizing, supporting, and participating in the 1998 seminar and in the future.
4. To discuss possible other ways for APPLE to extend its work in the field of agricultural education beyond the summer seminars; e.g., U.S. school links to Lithuanian schools, teacher and/or student exchanges, and other. Also, it was noted by APPLE that one of the first steps needed for fund-raising is a realistic proposal for future programs in which there is concurrence by Lithuanian institutions (governmental and other).

In Lithuania, the authors visited and established communications with the ministries of both agriculture and education, educators at the Lithuanian Agricultural University in Kaunas, agricultural schools and colleges, and explored potential funding arrangements in support of agricultural education with the U.S. Embassy, the World Bank, and related agencies in Vilnius.

Some Selected Observations

This section is a description of selected findings by the authors, assessing the current status of agricultural education in Lithuania. These assessments are based on information and feedback from their March meetings, plus some reflective analysis of personal observations and research from previous APPLE-sponsored workshops in Lithuania.

Lithuania's schools and colleges have a history of success in teaching skills and the use of technology as a part of the former system of centralized economy. Students have routinely been provided laboratory and field experience under the direction of teachers; however, the teaching of management skills such as planning, evaluating, and supervising has been minimal or lacking. Some schools have underutilized land and unused facilities, which have potential for increased use in their instructional programs. Teachers usually report the available land and livestock at the schools as positive resources for their instructional programs.

The curricula have been developed around rather narrow specializations that at one time fit the job placement pattern under the Soviet system but now need drastic revision to provide a more appropriate pattern for the emerging employment opportunities in the market-driven economy. Because the agricultural sector is in a state of change, with agribusiness supplies and services just emerging, there is confusion as to the nature of jobs and as to the opportunities for employment after graduation from the school-based programs. Teachers have reported that students lack motivation to learn and many are not stimulated to want to work or seek employment. The schools have no way to systematically help students become aware of career opportunities. This is especially critical since the teachers often lack supporting information that could be used through their teaching activities or for personal career counseling of students.

Teachers have instructional aids, but mainly those that are teacher-made. There is a need for newer aids that reflect modern technology and that are more likely to spark student interest. Some schools have computers and some courses have been organized to introduce computer skills to students, but much remains to be done to integrate computers into the curricula. In general, many school facilities and much equipment are outdated and in need of modernization.

The scope of the instructional programs at the agricultural high schools includes programs for students who did not complete the requirements in primary school and for students who are seeking vocational certificates, as well as for completion of a regular secondary school program with vocational certification. Programs available usually include home economics and mechanics, as well as the agricultural curricula.

Some of the agricultural high schools have reported the presence of *Young Farmer* and *Forester* clubs; but the reports about the activities of the members seem to indicate no relationship to the curricula of the schools. The activities seem to be more related to maintenance of traditions and values of the past rather than on leadership development and community service.

There are meetings held for teachers and administrators but those meetings seldom highlight the outstanding performance by teachers and schools. There appears to be no teacher organization that provides for leadership from the professional teachers.

Conclusions and Recommendations

Some major leadership challenges in vocational education planning for agricultural development in Lithuania include program evaluation, teacher education, curriculum revision, assuring adequate resources at the school/college levels, and creating a more flexible legislative and budgetary framework for cooperative effort and coordination between the Ministry of Education and Science (MOES) and the Ministry of Agriculture and Forestry (MOAF).

The rumored change of administrative structure that would have the agricultural education programs at the secondary and postsecondary levels administered by the MOES may provide a stronger philosophical base for those programs, but it is likely to lessen the sense of responsibility by the MOAF for maintaining and updating the technology that is so fundamental to successful programs.

The secondary and tertiary schools (high schools and postsecondary technical schools or colleges) should reflect the rapidly changing science, technology, and business of agriculture. Management and marketing decisions depend on access to a range of information and the capacity to apply it to appropriate circumstances. The students need to be involved in active learning situations so as to *learn to do* as well as *know how to do*. The students need directed and supervised experiences that develop their management and leadership competencies as well as their sense of responsibility for community membership.

The agricultural high schools and colleges provide a great potential for using the educational system to prepare youth for careers in the agricultural sector, which includes agribusiness, food production and processing, marketing, management, agro-tourism, fisheries, forestry, environmental and resource management, and other support services. Some suggested ways for Lithuania's educational institutions to serve in the transition from a centrally-planned economy to a market-driven economy are as follows:

1. The scope of the curriculum should be broadened to include supervised occupational experience programs, and leadership development and community service activities. This could be accomplished by encouraging individual teachers to be innovative with small projects, which are adapted to the students and situation at a particular school; and by communicating those successes to other teachers and schools. Perhaps pilot schools could be identified for encouraging program development that involves new courses, close working arrangements between the school and the local agribusinesses, etc.
2. An in-service center should be established for helping teachers link new technology in agriculture, livestock production, and natural resources with curricular changes, new instructional materials, and methods of teaching. This in-service center should be closely linked to the agricultural teacher preparation program with staff from both education and technology. It might be called a center for staff development and curriculum design.
3. There should be a review of the goals and purposes of the agricultural high schools. It may be that some of those schools should become multi-purpose area vocational education centers so as to better serve the business and industry needs of the area as well as to provide career development for the youth in a greater array of occupational clusters.
4. There should be a greater level of community involvement in the programs of agricultural education at both the secondary school and college levels. At the postsecondary level, the closer involvement of the agribusiness and natural resource private sector as well as the agro-tourism field could be one method of getting the curricula to fit the needs of the businesses and industries as well as providing more on-the-job placement opportunities
5. Provision should be made for the development of a professional organization of teachers from the agricultural schools. This is needed to give teachers opportunities to express their creativeness, provide peer teaching, and to promote their successes, which can provide for recognition and pride in the work of being a teacher.

Some short-range kinds of activities could be very helpful in achieving long-range goals. Many of those activities could, and should, involve administrators, faculty, and students at the local school and college levels. Probably the most successful long-range programs will come from the initiatives that evolve from creative, innovative students, teachers, and administrators in local programs, which demonstrate success. The following are typical examples of the kinds of activities that could be undertaken with a minimum of resources and have a maximum of local involvement:

1. Initiate school-to-school linkages for students and teachers to have exchange experiences.
2. Continue the APPLE workshops for teachers with emphasis on methods of teaching, use of experiential learning through youth organizations and projects, and English language instruction.
3. Identify and duplicate up-to-date instructional materials that good teachers are now using.
4. Conduct special study tours for teachers and administrators to observe outstanding programs in other countries.
5. Establish a fund for financing small projects from innovative teachers to encourage helping students *earn and learn*; and recycle *loan repayments* for use by students in the next year.

The findings and conclusions from this study should be helpful in recommending long-range strategies for agricultural education by the government ministries in Lithuania and in presenting some ideas to consider in planning future in-service workshops and other professional development activities for Lithuanian agricultural educators.

References

Connors, J. J., & Brousseau, J. (1996, November-December). Agricultural education in the former Soviet Union. *The Agricultural Education Magazine, 69*, (3), 22-23-25.

Connors, J. J., & Brousseau, J. A. (1997, April). Teachers' perceptions and uses of instructional technology in selected vocational agriculture schools in Lithuania. *Proceedings of the Association for International Agricultural and Extension Education., 13*, Session E, 1-6.

Csaki, C., Meyers, W. H., & Kazlauskiene, N. (n.d.). *Status of agricultural reforms in Lithuania: 1995 to 1997.* Washington, DC: World Bank.

Edwards, M. C., Meaders, O. D., & Brousseau, J. A. (1999). *Perceptions of Lithuanian agricultural educators on the usefulness of selected in-service education topics and future in-service education needs: A cross-case analysis*. Manuscript in preparation.

Jackūnas, Ž. (1996). *Secondary education in Lithuania.*

National Observatory in Lithuania. (1997). *VET [vocational education and training]-related laws: Lithuania*. Vilnius: Author

National Observatory of Lithuania. (1997). *The VET [vocational education and training] system in Lithuania*. Turin, Italy: European Training Foundation.

Štuikys, V., & Ladyga, A. (1995). *Agriculture in Lithuania*. Vilnius, Lithuania: Valstybinis Leidybos Centras.

Thuemmel, W. L., Meaders, O. D., Mannebach, A. J., & Brousseau, J. A. (1998). Perceptions of teachers and administrators from selected vocational agriculture schools in Lithuania. *Proceedings of the Association for International Agricultural and Extension Education, 14*, Session J, 1-11.

Level of Involvement in Sustainable Agriculture Activities among Agricultural Researchers in Venezuela

by

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Abstract

This descriptive study was designed to determine the level of involvement of agricultural researchers in sustainable agriculture activities in Venezuela. A mail questionnaire was developed to identify levels of involvement and orientation and attitude toward sustainability. Ninety-six researchers participated in the study, representing the 17 research stations throughout the country. A 100% response rate was achieved. Findings indicated a low level of involvement in sustainable agriculture activities and a broad orientation and a slightly positive attitude toward sustainability.

Sustainable development as defined by FAO (1989) is, "the management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such sustainable development (in the agriculture, forestry and fisheries sectors) conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable, and socially acceptable." (p. 8) Sustainable agriculture is a concept with several different facets, incorporating farming practices, food safety, better working conditions, land stewardship, restoration of the family farm, and economic profitability (Rivera, 1990).

As stated in Agenda 21 (UNCED, 1992) scientific knowledge should be applied to articulate and support the goals of sustainable development based on existing and emerging innovations within the sciences. One role of the sciences should be to provide information to better enable formulation and selection of environment and development policies in the decision-making process. New and efficient technologies will be essential to increase the capabilities, in particular of developing countries, to achieve sustainable development, sustain the world's economy, protect the environment, and alleviate poverty and human suffering.

Agricultural research according to Arnon (1989) is "research whose objective it is to apply a wide variety of scientific disciplines to the development of new approaches to agricultural production, and to the solution of the problems besetting the farmer." (p.95). Therefore, the challenge for sustainable agriculture research will be to learn how to share innovations and insights between industrial and developing countries and to end one-way transfer of technology from industrial world to the Third World (Altieri, 1995). As Francis, et al. (1989) pointed out "agricultural scientists hold some of the pieces to the complex puzzle of how food production can be sustained into the future." (p. 98). The research approaches used in food and agriculture will determine how solutions are derived, which options are considered available, and what types of changes are likely to take place (Allen & Sachs, 1990). Choosing research priorities, and the research itself, should involve the opinions of a broad cross-section of farmers, farm organization, suppliers, processors, scientists, Extension faculty, environmental and consumer organizations, government agencies, and policymakers (Lacy, 1993).

Agricultural development in Venezuela, especially in the last 50 years, has been influenced by and associated with the dynamic socio-economic evolution of the country, mainly derived from oil production. In general, the main influences have been on the changes in quantitative and qualitative food demands and requirements of the growing population (22.3 millions in 1996), and on the development of an unstable and extractive-like agriculture with highly mechanized practices. The result has generally been a progressive, and many times irreversible, land degradation, leading to fast decreases in productivity and increases in production costs (Sentis, 1988). Current environmental issues in Venezuela include sewage pollution of inland lakes, deforestation, soil degradation, and urban and industrial pollution, especially along the Caribbean coast. Changes in the present policies of agricultural development in Venezuela are needed, which may lead through appropriate research and technical assistance to the adoption of more sustainable and efficient agricultural system.

The body of knowledge about sustainable agriculture is increasing, but there is limited information in Venezuela about agricultural researchers' attitudes toward and involvement in sustainable agriculture activities. Agricultural research in Venezuela is challenged by change. Agriculture is in transition as researchers, educators, and farmers take on the responsibility of developing agriculture production systems that are ecologically, economically, and socially sustainable by adapting new policies, management plans, and technology.

Statement of the Problem

The national research institute (FONAIAP) was created in 1961 as an autonomous institution of the Venezuelan Ministry of Agriculture and Livestock (MAC). Since 1975, FONAIAP has been responsible for agricultural research and technology transfer programs. The mission of FONAIAP is to contribute to the socioeconomic development of Venezuela, especially the agricultural sector, through the generation and transfer of agricultural knowledge and technologies applied to food production, aimed to increase farming productivity and economic competitiveness, warrant natural resources conservation, and assure the food base for the population. To accomplish this mission, FONAIAP conducts basic strategic research and technology generation, promotes knowledge and technology transfer, as well as innovation and adaptation of technologies into production units. In 1995, sustainable agriculture was included in the mission of FONAIAP. The revised mission statement indicated that "research to generate knowledge and technologies based upon Venezuelan farming systems priorities, contributing to the sustainable development in the agricultural sector and the rural communities, with a modern and efficient organization in harmony with the rest of the components of the national and international agricultural technology innovation system" (p. 17) is needed.

Knowledge of the agricultural researchers' orientation and attitudes toward sustainable agriculture is an important step in working for a more sustainable system, but in itself does not necessarily reveal the agricultural researcher's commitment to sustainable agriculture. The identification of agricultural researchers' orientation and attitudes toward sustainable agriculture would contribute to the strengthening of the research and educational programming efforts in sustainable agriculture.

Purpose and Objectives

Boone (1985) stated that members of an organization "must understand and be committed to its mission and philosophy, the organization's objectives or ends must be understood at all levels of the organization" (p. 85). The level of involvement of agricultural researchers in sustainable agriculture activities may indicate the extent to which the researchers are committed to including a sustainable dimension when designing and implementing agricultural research. Therefore, the purpose of this study was to investigate the level of professional involvement in sustainable agriculture activities among agricultural researchers in Venezuela. Sustainable agriculture was operationalized for the study as ". . .a management strategy which helps the producers choose hybrids and varieties, a soil fertility package, a pest management approach, a tillage system, and a crop rotation to reduce the cost of purchased inputs, minimize the impact of the system on the immediate and the off-farm environment, and provide a sustained level of production and profit from farming." The specific objectives of the study were to:

1. Describe the agricultural researchers on the following demographic characteristics: gender, age, level of education, field of work, background, and location of education.
2. Measure the perceived orientation toward sustainable agriculture among agricultural researchers in Venezuela.
3. Identify attitudes toward sustainable agriculture among agricultural researchers in Venezuela.
4. Determine the level of professional involvement in sustainable agriculture activities among agricultural researchers in Venezuela.
5. Determine the relationships between and difference between levels of involvement in sustainable agriculture activities and perceived orientation and attitude toward sustainable agriculture, and selected demographic characteristics.

Methodology

The target population for this study was agricultural researchers of FONAIAP in Venezuela. The population was composed of 386 agricultural researchers. FONAIAP is divided into 17 research units. A proportional stratified sampling method was used to select 96 agricultural researchers to be included in the sample. Data for this study were collected by the researcher in Venezuela through the use of a mail questionnaire. A four-part questionnaire was developed by the researcher based upon the objectives of the study. Face and content validity were established using a panel of experts in the Department of Human and Community and Resource Development and the School of Natural Resources at The Ohio State University. To measure the internal consistency of the instrument, Cronbach alphas were calculated for section I ($r = .85$) and section II ($r = .73$) using a pilot test group of 40 university researchers in Venezuela. The instrument was mailed to the sample of agricultural researchers in March 1998. A 100% response rate was achieved with all questionnaires usable for data analysis. All data were analyzed using the Statistical Package for Social Sciences (SPSS 8.0, 1998) using a priori alpha level of .05

Findings

Demographic Characteristics of the Sample

Males comprised 75% and females 25% of the sample. Agricultural researchers ranged in age from 27 to 59 with a mean age of 44 years. The majority of the agricultural researchers had a graduate degree (87.5%). Agronomy comprised the largest group of researchers in the study with 40% followed by the animal sciences (16%) and soil sciences (13%). The majority (73%) of agricultural researchers had a non-farm background and 61% of the sample completed their college degree in Venezuela. Census data available from the population of agricultural researchers of FONAIAP were collected for the demographics characteristics of gender (males = 61% and females = 39%) and level of education (graduate degree = 89% and non-graduate degree = 11%), indicating that the sample was similar to the target population on these two characteristics.

Agricultural Researchers Orientation and Attitude toward Sustainable Agriculture

Agricultural researchers reported having a moderately broad orientation toward sustainable agriculture with an overall score of 58 (S. D. = 6.975). Scores could range from 18 to 72. Lower scores indicate a more narrow orientation toward sustainable agriculture and higher scores indicate a more broad orientation toward sustainable agriculture. Agricultural researches had slightly positive attitude toward sustainable agriculture with a mean score of 3.98 (S. D. = .336) in a range from 1 = strongly disagree to 6 = strongly agree.

Agricultural Researchers Involvement in Sustainable Agriculture

Researchers were asked to indicate the number of activities related to sustainability in which they had participated during the past three years (1995-1997). The overall mean score for level of involvement was 14 (S. D. = 20.37) with individual scores ranging from 0 to 115. Table 1 shows the involvement in sustainable agriculture activities for the sample.

Activities Related to Sustainable Agriculture	**f**	**%**
Attending a conference, seminar, or workshop	459	34
Training farmers and conducting on-farm research	407	30
Meeting with governmental and non-governmental officials	154	11
Leading a conference, seminar, or workshop	96	7
Training Extension agents	91	6
Presenting at a conference, seminar, or workshop	84	6
Publishing a paper	49	4

Table 1: Frequencies and percentages of agricultural researchers' involvement in sustainable agriculture activities. (n = 96)

No significant differences were found (Table 2) when level of involvement was compared to selected demographic characteristics: gender (male and female), level of education (graduate degree or non-graduate degree), field of work (social or biological science), background (farm background or non-farm background), and location of education (in country or out of country).

	n	Mean	S. D.	t-test	Significance
Gender				-.262	.794
Male	72	15.00	19.54		
Female	24	13.73	23.11		
Level of Education				-.639	.524
Graduate	77	14.71	20.95		
Non-Graduate	19	11.36	18.07		
Field of Work				-.162	.872
Biological Sciences	84	13.95	21.31		
Social Sciences	9	12.77	13.19		
Background				.038	.970
Non-Farm	70	14.10	22.14		
Farm	26	13.92	14.97		
Location of Education				-.812	.419
Venezuela	59	12.71	20.03		
Out of Venezuela	37	16.18	20.99		

Table 2: Differences between mean scores of agricultural researchers for level of involvement by independent variables. (n =96)

Relationships Between Dependent Variable and Independent Variables

The correlations between the independent variable level of involvement and orientation toward sustainable agriculture, attitude toward sustainable agriculture, selected demographic characteristics ranged from negligible to low (Table 3). A statistically significant low correlation r=.236) was found between age and level of involvement in sustainable agriculture activities, indicating older researchers are more involved in sustainable agriculture activities than younger researchers.

Independent Variables	Correlation Coefficient	Magnitude
Orientation	.03	Negligible
Attitude	.13	Low
Gender	.02	Negligible
Age	.23*	Low
Education Level	.06	Negligible
Field of Work	.01	Negligible
Background	.01	Negligible
Location of Education	.08	Negligible

Table 3: Relationship between level of involvement in sustainable agriculture activities and selected independent variables. (n = 96)

Conclusions and Implications

Demographic characteristics of the sample

Agricultural researchers of FONAIAP are predominantly male, in their 40s, with a Master's degree and in the fields of agronomy, animal science, or soil science. The majority of agricultural researchers have a non-farm background and completed their graduate degree in Venezuela.

Orientation toward sustainable agriculture

The agricultural researchers tend to have a broad orientation toward sustainable agriculture. Researchers emphasized the importance of environmental protection, the well-being of rural residents and farm communities, and the production aspects of sustainability. Holding a broad orientation toward sustainable agriculture could encourage agricultural researchers to consider the opinions of farmers, farm organizations, faculty and universities, Extension agents, environmentalists, government agencies, and policymakers in designing and implementing sustainable research to address the increasing and changing needs of farmers and the protection of the environment in Venezuela. Holding a narrow orientation toward sustainable agriculture could result in agricultural researchers being out of touch with the needs of small and subsistence farmers, contributing to the progressive land and environmental degradation, and employing narrow economic and productivity criteria to measure their success. A holistic, systems, or whole farm view is necessary; that sustainable agriculture must be site-specific, with local adaptation; and that a stable and appropriate relationship between agricultural production and consumption in an environment of continued population growth is needed for giving small farmers the stability and viability they need to provide for their own needs and contribute to meeting the needs of the society.

Attitude toward sustainable agriculture

Agricultural researchers in FONAIAP possess a slightly positive attitude toward sustainable agriculture. The positive attitudes possessed by agricultural researchers may be due to the fact that they understand the importance of sustainable agriculture and acknowledge that it is an integral part of the farming system. The responsibility of agricultural researchers in Venezuela is to meet the needs of small and subsistence farmers and to better understand the economic, environmental, and productive barriers the producers will face in the future. When agricultural researchers hold a positive attitude toward sustainable agriculture they may encourage more involvement of farmers as primary clients in the research process, favor a more multi disciplinary and collaborative approach, give greater attention to agro-ecological principles, emphasize the diagnosis of constraints and setting of research priorities within the context of the whole farm system, and promote the evaluation and adoption of technologies at the farm level. On the other hand, a less positive attitude toward sustainable agriculture could encourage agricultural researchers to stay in disciplinary-based and reductionist research with marginal impact on small and subsistence farmers.

Level of involvement in sustainable agriculture

The agricultural researchers have a low level of involvement in sustainable agriculture activities. Most of the activities involve attending conferences, seminars, or workshops related to sustainable agriculture, training farmers and conducting on-farm research related to sustainable agriculture, and meeting with governmental and non-governmental officials on issues related to sustainability. Levels of involvement in sustainable agriculture activities are not associated with gender, level of education, field of work, background, and location of education of the researchers. Agricultural researchers show an apparent need for knowledge about sustainable agriculture as indicated by their attendance at conferences and seminars related to sustainable agriculture. In contrast, the low level of involvement in publishing and presenting papers on sustain ability could indicate that the researchers may not be generating enough research in sustainable agriculture to publish and present research results.

Relationships and differences between levels of involvement and selected variables

No significant relationships were found between level of involvement in sustainable agriculture activities and agriculture researchers' orientation and attitude toward sustainable agriculture. However, older researchers have a slight tendency to be more involved in sustainable agriculture activities than younger researchers. These finding indicates that a better understanding of agricultural researchers' behavior and the influences that contribute to deter involvement in sustainable agriculture activities is necessary. One of the roles of agricultural researchers is to generate and disseminate technological packages and information that could fulfill the increasing demand for a more responsible environmental technology in the farm community. The extent to which agricultural researchers have more sustainable agriculture technology available will contribute to the development of a sustainable agriculture aimed at improving small and subsistence farm productivity, preserving the rural population, and the continuing supply of food.

Recommendations

Based upon the review of literature, the findings of this study, and the previous conclusions, the following recommendations are proposed.

1. Pre-service training in farming systems on sustainable agriculture for new research workers and in-service training for current researchers are recommended to enhance agricultural researchers' skills, knowledge, and abilities necessary to fulfill the mission of FONAIAP in the generation of a more sustainable technology that would respond to the increasing needs of the farmer population in Venezuela.

2. Data gathered from this study indicate that the involvement of researchers in publishing and presenting at seminars, workshops, and conferences on topics related to sustainable agriculture is rather low. The implementation of training related to the diffusion of technical information and the impact of dissemination on the adoption of technology is recommended to encourage more involvement.

3 Agricultural researchers showed a high level of involvement in training farmers and conducting on-farm research related to sustainable agriculture. The lack of effective links between research and Extension institutions has impeded the development and transfer of technology appropriate for small-scale and subsistence farmers in Venezuela. The integration through on-farm research of farmers, Extension agents, and researchers to develop and maintain a sustainable agriculture system that responds to the environmental, socio-economic, and production needs of farmer to fulfill the increasing demand of food in developing countries without increase the degradation of the environment is needed.

4. The use of factor analysis on the orientation and attitude scales to determine if there are distinct dimensions within the overall set of items is recommended. In a study by Dunlap et. al, (1995), three relatively distinct factors emerged: ecological, socio-economic, and ethical dimensions of sustain ability. The replication of the present study may provide a more comprehensive view of the orientation and attitude toward sustainable agriculture of agricultural researchers.

5. Identifying the constraints that shape agricultural researchers' involvement in sustainable agriculture and the researchers' link with the Extension service in Venezuela is recommended. The success of a transition to a sustainable agriculture system will depend on the ability of research workers to identify problems that limit productions, to understand the social, economic, cultural, and institutional environments in which the farmers they intend to serve operate, to highlight the constraints encountered in adopting research results, and to focus on the social and economic consequences of successful adoption.

References

Allen, P. & Sachs, C. (1990). Sustainability in the balance: What do we want to sustain? University of California, Santa Cruz.

Altieri, M. (1995). Agroecology: the science of sustainable development. Boulder, CO: Westview Press.

Aron, I. (1989). Agricultural research and technology transfer. New York, NY: Elsevier Applied Science.

Boone, E. J. (1985). Developing programs in adult education. New York, NY: Waveland Press, Inc.

Edwards, C. (1988). The integration of components of sustainable agriculture, in Proceedings of the International Conference on Sustainable Agricultural Systams. September 19-23, 1988, Columbus, OH.

FAO. (1989). Sustainable agricultural production: Implication for internatinal agricultural research. FAO Research and Technology Paper #4. Rome, Italy.

FONAIAP. (1996). Plan operativo. Maracay, Venezuela.

Francis, C.A., Sander, D., & Martin, A. (1987). Search for a sustainable agriculture: Reduced inputs and increased profits. Crops and Soils, 39 (9), 12-14.

Lacy, W. (1993). Can agricultural colleges meet the needs of sustainable agriculture? American Journal of Alternative Agriculture, 8 (1), 40-45.

Rivera, W., Gustafson, D.J., & Corming, S.L. (1991). Policy choices in developing agricultural extensin systems: A framework of analysis. International Journal of Lifelong Learning, 10 (1), 61-74.

Sentis, P.I. (1988). Soil and water management systems limiting sustainable agricultural productivity in Venezuela. Proceedings of the International Conference on Sustainable Agricultural Systams. September 19-23, 1988, Columbus, OH.

UNCED. (1992). Agenda 21, Earth Summit. Rio de Janeiro, Brazil.

Session H Program Delivery

March 23, 9:00 - 11:00 a. m.

Session Chair - James Phelan

Location: Laventille Room

TITLE: Understanding Information Sources in the Communication Process: Preparing for the Information Revolution in Extension
AUTHOR: Pauline Dowlath, Joseph Seepersad
University of the West Indies
DISCUSSANT: Brian Sager

TITLE: Some Challenges Facing Extension in The Twenty-First Century: A Caribbean Perspective
AUTHOR: Joseph Seepersad
University of the West Indies
DISCUSSANT: Brian Sager

TITLE: Linking Extension to Homemakers: Identifying Preferred Communication Methods
AUTHOR: Kristina Boone, Sara Zenger
Kansas State University
DISCUSSANT: Marilyn Corbin

TITLE: A Comparison of Vocational Educators' Perceptions: The Purpose of Vocational Education Programs in Zimbabwe's High Schools
AUTHOR: Davidson M. Mupinga, Michael F. Burnett
Louisiana State University
DISCUSSANT: Marilyn Corbin

UNDERSTANDING INFORMATION SOURCES IN THE COMMUNICATION PROCESS: PREPARING FOR THE INFORMATION REVOLUTION IN EXTENSION

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JOSEPH SEEPERSAD #
Ph.D

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ABSTRACT

The role of information sources in communicating various aspects of a technological package (techpack) was examined within an agricultural information system. The study population comprised small-scale commercial rice farmers. Information sources were examined as those supplying direct and indirect information to the farming population.

The major information sources were: the farmers' own experience, tradition, family, friends and extension officers. The importance of these varied with each component of the techpack. For recently introduced technologies, extension was the most frequently used information source for those who were aware of the technology. Extension's role decreased with increasing awareness of the technology throughout the population. Farmers obtained information about these technologies from other farmers however the hidden role of extension is unmasked as it provided information indirectly to these farmers. Indigenous information sources were prominent in some technologies which had a traditional base, or which could be easily adapted from other practices. Indigenous sources also played a significant role in the adoption of many components of the techpack. For other components, there was no significant difference among information sources on the adoption pattern.

Extension's input-catalytic role in the initial phases of introduction of technology in therefore emphasised. This can form the basis for optimising the use of the electronic information media in transmitting information in the initial phases of the diffusion process. The informal indigenous system, supported by personal and other extension information contacts will then carry the technology throughout the population.

INTRODUCTION

In the latter portion of the 20th Century there have been quantum leaps in information transfer technology, with instant global availability of all types of information via superhighways. In contrast, information for most farmers in the developing world is still obtained via verbal and printed means and to a lesser extent, via radio and television. Operating within this context, agricultural extension continues to pursue its mandate. This involves "dissemination of knowledge that is necessary for improving agricultural productivity" (Spore, 1997). As a consequence of this, it is anticipated that improved productivity will lead to improved standard of living of the farming families (Fernando, 1988).

While the terms "knowledge" and "information" are used interchangeably, it is recognised that extension workers provide information which is then used to influence knowledge. It is only information that can be exchanged: knowledge exists in people's minds.

There is need to revisit and add sophistication to the current thinking on information sources to better understand their role in the diffusion of technology. This will then facilitate optimum communication of information from the various sources, via the wider range of available transmission media, both traditional and new.

In traditional extension communication and technology transfer studies, the source of information is usually assessed as operating generally and is assumed to be the same for all components of the technology. This study seeks to identify the information sources that operated in communication related to different components of a selected technological package. These sources are further examined to determine the preferred information sources used for specific types of technology at varying stages in the diffusion of information. This study also seeks to unmask the "hidden communicator" – the indirect information source.

THEORETICAL FRAMEWORK

The seminal work on communication as enunciated by Rogers and Kincaid (1981), continues to serve as the basis for understanding the processes involved in information transfer.

Extension forms part of an "agricultural knowledge system" which also involves research, university, farmers' groups and private input suppliers. Baxter et al. (1989) and Rolls et al. (1988) support this view, emphasising extension's position as part of a complex system. Ganpat (1993), in his analysis of the Agricultural Knowledge and Information System (AKIS) identified five categories of actors – farmers, extensionists, Rice Mill agronomist, researchers and agro-shop dealers. He found that farmers discussed rice production technologies quite easily and readily among themselves, sharing indigenous knowledge. They related to extensionists quite easily, while linkages with researchers were occasional. Roling (1986) views extension as part of a knowledge system in which knowledge generation, transformation, transfer, utilisation and feedback work synergistically. The use of other farmers, friends and family as technology sources is an important part of the diffusion process of adoption. Stavis (1979) describes the "other sources of knowledge" as a "spontaneous extension system" with extension having a "critical initial catalytic role" in energising this system. Ramjohn (1973) found that the influence of the family on the decision making process was high among farmers of East Indian descent. Wake (1982) states that rural people seek information from each other, and recommends the use of communication methods which capitalise on this. He cautions about assuming a high credibility of extension sources of information. Wake further recommends that, because of extension's low credibility, there is need to increase dialogue with farmers and build on the tendency of rural people to seek information form each other. This dialogue is necessary to develop a change in attitude and to provide information to assist decision making and translate knowledge into action.

It is increasingly recognised that farmers' own knowledge represents an untapped source of innovations which can be developed and/or adapted after relevant farm trials and returned to the system. Rolls et al. (1988) describe this information and knowledge as self-generated and acquired by users as part of increasing personal skills in management.

METHOD

This study formed part of a larger research project to evaluate a rice extension programme conducted over a seven (7) year period. The population under study was the rice farmers in the Oropouche Lagoon - the largest collection of small rice producers in Trinidad – who had commercial production over the study period. A list was obtained from the Rice Mill, the sole purchaser of paddy. Two hundred (200) names were selected from the list by systematic random selection using N/n as the selection interval (I), where N = number of units in the sample frame (2583) and n = number of units in the sample (200). The actual sample size to be used for analysis was one hundred and fifty (150), but 200 was selected to allow for non-location of farmers. The method of a "single cross-sectional household survey at the end of the project" was used (Casley and Kumar, 1987).

A structured interview schedule was developed to collect information from the population sample. This information was used in quantitative evaluation. Information from the extension programmes, extension officers and researchers was used to formulate the questions. The rice technological package (techpack) was subdivided into seventeen (17) components, and information obtained about each of these. The respondents' awareness of the technology component was used to assess the spread of awareness across the population. It was also used as a filter question to avoid responses about information sources from persons who were not familiar with the technology. Both direct and indirect information sources were examined. The following information sources were assessed :- tradition, experience, family, other farmers, extension officers, agricultural shops, media, rice mill, and the agricultural development bank. To identify direct information sources, respondents were requested to state from whom they obtained the main information about the specific technology. The indirect source was assessed by asking respondents whom they perceived as providing the information to their family or other farmers or from whom they gained their experience, when these were the respondents' direct information sources. In order to obtain sufficient data for statistical analysis, information source groups were combined as follows – tradition and experience combined as indigenous sources and "own experience", family and other farmers combined as "others".

Data was analysed using the Statistical Package for the Social Sciences (SPSS) programme. Regression analysis was used to test the relation of perceived economic importance of the technology to its adoption. Binary (dummy) variables were added to the regression to test the effects of information sources on adoption levels of each technology. Extension officers were used as the referents based on their theoretical importance in relation to other variables.

RESULTS

Household and production data revealed the following. The average age of male household heads was 48 years while for females it was 44 years. Most farmers had some level of formal education, with only 9.72 percent males and 13.49 percent females having no formal education, and these were within the older age groups. 63 percent of both male and female farmers attained primary and 25 percent attained secondary levels of education.

The average size of holdings used for agricultural production was 2.7 hectares, the median being 1.8 hectares. Rice production was undertaken in 1.0 hectare of this area with a median of 0.8 hectare. Rice production increased from 2 tonnes to 4 tonnes per hectare per year over the study period. This was mainly due to increased yield from 2.3 tonnes to 3.1 tonnes per hectare per crop and double cropping of parts of the land by 39 percent of farmers.

Table 1 presents data on the sources of information about the components of the techpack in descending order of extension's importance as a direct source. The first column gives data on the awareness level of technology among the population.

It can be seen that there are variations in the use of information sources for different components of the techpack. The mass media, input suppliers and the Rice Mill were minimally used as information sources and were not included in analyses.

The data can be examined in 3 sections to facilitate interpretation. The first group contained technology components (numbers 1 – 7) about which a large number (over 50 %) had received information from extension sources. These technologies were recently introduced to the farmers, and less than 50 % of the sample were aware of the technology. Improved rice varieties was the exception since 99 % of the population were aware. There were extension programmes introducing improved varieties as well as the sale of seeds occurring from the same office used by extension staff.

The second group contained technology components (numbers 8 – 12) which had extension sources used by 25 – 49 % of the population. For these components, other farmers and family served as the major direct source of information. When the indirect information source is observed however, the hidden role of extension is revealed, with 60 – 70 % indirectly obtaining information from extension sources. These technologies had been around for some time, and the role of extension programmes was to re-emphasise their value to increased rice yields and improved quality. There was a high awareness level of these technologies (over 97 %) except for the component recommending the use of few seedlings per hill.

The third group of technology components (numbers 13 – 17) comprise those for which less than 25 % of the farmers obtained information from extension. There were also high awareness levels of these technologies among the sample population. Respondents cited their own knowledge and experience as the main information source (50 – 91 %). These technologies had high visibility or farmers could use their own judgement to adjust their practices to the demands of the new technology. Extension was also used by less than 25 % of this group as the indirect information source. The exception to this was the use of mechanical threshers with a high (73 %) indirect extension source of information. This technology had been recently introduced prior to the start of the evaluation, and had also been used in extension programmes.

Table 1 INFORMATION SOURCES OF COMPONENTS OF TECHPACK

TECHNOLOGY COMPONENT	AWARENESS		DIRECT SOURCE OF INFORMATION			INDIRECT SOURCE OF INFORMATION		
	YES	NO	OWN	OTHER	EXT.OFF.	OWN	OTHER	EXT. OFF.
1. Seed selection	36 24.0%	114 76.0%	- -	3 8.3%	33 91.7%	- -	- -	3 100%
2. Fertliliser application time (2 and 7 weeks)	36 24.0%	114 76.0%	2 5.6%	9 25.0%	25 69.4%	1 12.5%	1 12.5%	6 75.0%
3. Chemical control of pests and diseases	57 38.0%	93 62.0%	2 3.5%	20 35.1%	35 61.4%	1 6.3%	3 18.8%	12 75.0%
4. Raised nursery beds	66 44.0%	84 56.0%	15 22.7%	12 18.2%	39 59.1%	10 43.5%	3 13.0%	10 43.5%
5. Pre-emergent herbicide	44 29.3%	106 70.7%	1 2.3%	19 43.2%	24 54.6%	- -	2 15.4%	11 84.6%
6. Fertiliser application rate (50kg/ha)	67 44.7%	83 55.3%	8 11.9%	23 34.3%	36 53.7%	2 8.0%	4 16.0%	19 76.0%
7. Improved variety	149 99.3%	1 0.7%	- -	74 49.7%	75 50.3%	- -	2 3.0%	64 97.0%
8. Few seedlings per hill	104 69.3%	46 30.7%	22 21.2%	33 31.7%	49 47.1%	3 6.5%	11 23.9%	32 69.6%
9. Close spacing	148 98.7%	2 1.3%	35 23.7%	57 38.5%	56 37.8%	9 12.2%	14 18.9%	51 68.9%
10. Fertiliser use	147 98.0%	3 2.0%	5 3.4%	89 60.5%	53 36.1%	4 5.1%	4 5.1%	70 89.7%
11. Double cropping	145 96.7%	5 3.3%	3 2.1%	9 62.8%	51 35.2%	7 8.3%	2 2.4%	75 89.3%
12. Early transplanting (3 weeks)	148 98.7%	2 1.3%	67 45.3%	36 24.3%	45 30.4%	10 13.5%	27 36.5%	37 50.0%
13. Early weed control	97 64.7%	53 35.3%	60 61.9%	13 13.4%	24 24.7%	11 22.5%	26 53.0%	12 24.5%
14. Early threshing	133 88.7%	17 11.3%	70 52.6%	33 24.8%	30 22.6%	15 21.7%	34 49.3%	20 29.0%
15. Low seeding rate	120 80.0%	30 20.0%	76 63.3%	17 14.2%	27 22.5%	34 56.7%	13 21.7%	13 21.7%
16. Mechanical thresher use	146 97.3%	4 2.7%	4 2.7%	110 75.3%	32 21.9%	20 21.3%	5 5.3%	69 73.4%
17. Land levelling	148 98.7%	2 1.3%	135 91.2%	8 5.4%	5 3.9%	55 56.7%	37 38.2%	5 5..2%

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Regression analysis was used to test the null hypothesis that, for each component of the techpack, there was no significant difference between extension officer as the direct information source, and other direct information sources, in determining its adoption level.

Table 2 shows extracts of the analysis. For some technologies, for example, fertiliser application rate and land leveling, the null hypothesis was rejected. For these practices, experience and/or tradition were more significant than extension officer as the direct information sources influencing adoption.

The null hypothesis was also rejected for few seedlings per hill, but in this case, family was more significant than extension officer as the direct information source influencing adoption.

There was no significant difference among any direct information sources on adoption of many (9) technologies, for example, early transplanting and double cropping, and thus the null hypothesis is accepted for these technologies.

TABLE 2 **MULTIPLE REGRESSION OF ADOPTION OF TECHNOLOGY ON IMPORTANCE FOR PROFIT AND DIRECT INFORMATION SOURCE**

TECHNOLOGY	INDEPENDENT VARIABLES (n)	CONST-ANT	B	S.E. B	R^2	R^2CHANGE	T	PROBAB. OF SIG. T
Early transplanting	Importance(148)	2.848	0.646	0.082	0.289	0.289	7.904	0.000
Double cropping	Importance(145)	-0.087	0.967	0.124	0.288	0.288	7.766	0.000
Fertiliser application rate	Importance (67)	0.938	0.347	0.038	0.488	0.488	9.227	0.000
	Experience(7)		0.725	0.336	0.500	0.012	2.154	0.000
Low seeding rate	Importance(120)	0.070	1.140	0.064	0.830	0.830	17.864	0.000
	Experience(54)		1.109	0.253	0.841	0.011	4.389	0.000
	Tradition (22)		0.904	0.313	0.847	0.006	2.889	0.000
Land leveling	Importance(148)	2.939	0.410	0.050	0.351	0.351	8.123	0.000
	Other farmers(7)		1.597	0.265	0.375	0.026	6.029	0.000
	Experience(75)		1.241	0.204	0.392	0.017	6.082	0.000
	Tradition (22)		1.182	0.208	0.491	0.099	5.679	0.000
Early weed control	Importance(97)	-1.065	1.221	0.117	0.669	0.669	10.406	0.000
	Tradition (30)		1.327	0.324	0.680	0.011	4.096	0.000
	Experience(30)		1.215	0.319	0.707	0.027	3.811	0.000
	Family (3)		1.774	0.659	0.725	0.018	2.691	0.000
Few seedlings per hill	Importance(104)	-0.089	1.251	0.053	0.833	0.833	23.820	0.000
	Family(7)		0.907	0.454	0.837	0.004	1.995	0.000

DISCUSSION

The study clearly shows extension's input-catalytic role in activating the process of diffusion of technology among a farming population. Extensionists function at the initial phases of introducing new technologies. Once the technology is perceived as being economically profitable, it can then be carried among the community by the informal spontaneous inter-farmer extension system. This diffusion of information can continue until the technology is accepted as part of the production process or until modified or changed in response to new information.

The importance of partitioning a techpack into its essential components is emphasised since their communication pathway varies. Extension programmes can then be more focused on the introductory stages of specific technology components which are identified as limiting optimum production.

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The regression analysis of adoption on direct information source showed that extension, while serving as a major direct information source, is not as significant as indigenous sources in the final decision about adoption. The role of extension in identifying and utilising this indigenous information system as a means of disseminating information and ensuring sustained adoption is crucial to agricultural development.

There is need for further study on the effects of the source of information on adoption, since adoption of technology is one of the ultimate aims of many extension programmes. The need is recognised for more rigorous analysis of information sources, apart from other variables which influence the adoption decision.

Looking towards the 21st Century, the study provides a base for communication studies to facilitate effective use of electronic transfer technologies. The household data shower that most farmers attained at least primary level education, many pursuing further trade or secondary level of education. In many households, family members are employed in other occupations. In Trinidad and Tobago, there is a thrust to facilitate technology accessibility and use. The availability of personal computers in homes and schools is increasing. Distance education programmes are also being emphasised. It is therefore important that forward thinking extension programmes should be developed to make maximum use of these technologies. These should concentrate on creating awareness, for example via attractively designed web pages. They should provide information on the components of the technology considered critical for successful production. These could be based on new research or modifications of existing technologies. The support of the electronic media by person to person extension group teaching activities for selected technology components should not be neglected since effective communication must facilitate feedback from the target group.

REFERENCES

Baxter, M.; Slade, R. and Howell, J. 1989. Aid and agricultural extension-evidence from the World Bank and other donors. Technical Paper #87. Washington: World Bank.

Casley, D. and Kumar, K. 1987. Project monitoring and evaluation in agriculture. World Bank publication. Maryland: Johns Hopkins University Press.

Fernando, N.A. 1988. Factors affecting the effectiveness of extension service in developing countries: An analysis of evidence form Sri Lanka's coconut subsector. Agriculture Administration and Extension 30: 233-243.

Ganpat, W. 1993. Household determinants of technology utilisation by limited-resource rice based farmers in Trinidad. M.Phil. Thesis. Dept. of Agricultural Extension, University of the West Indies, St. Augustine, Trinidad and Tobago.

Ramjohn, R.K. 1973. A comparative study of reference group influences on the adoption of farm practices between the ethnic groups in Trinidad. M.Sc. Thesis. Dept. of Agricultural Extension, University of the West Indies, St. Augustine, Trinidad and Tobago.

Rogers, E.M. and Kincaid, D.L. 1981. Communication network. New York: The Free Press.

Roling, N. 1986. Flexibility versus targets in setting extension objectives. In Investing in rural extension: Strategies and goals. Edited by G. Hones, 107-112. London: Elsevier Applied Science Publishers.

Rolls, M.J., Jones, G.E. and Garforth, C. 1988. The dimensions of rural education. Reading Rural Development Communications. 24: 3-7.

SPORE, 1997. Extension services : master or servant? Technical Centre for Agricultural and Rural Cooperation (CTA) 68 :1-3.

Stavis, B. 1979. Agricultural extension for small farmers. MSU rural development working paper, Dept. of Agricultural Economics, Michigan state University. 81 pp. Typescript.

Wale, M.R. 1982. Dialogue or directed extension? The limits to communication. Reading Rural Development Communications. 16: 3-7.

SOME CHALLENGES FACING EXTENSION IN THE TWENTY-FIRST CENTURY: A CARIBBEAN PERSPECTIVE

Joseph Seepersad

ABSTRACT

Although the dominant form of agricultural extension in the English-speaking Caribbean has been the Ministry of Agriculture based model many other approaches have been used with some success. The paper analyzes the Caribbean's experiences and proposes guidelines for dealing with future challenges. National extension systems have largely been associated with small farmers and agricultural extension has come to be perceived as an activity primarily for the smaller, less commercial farmers. This needs to change and in future, public sector extension should direct more of its efforts to the large farmer. Although much progress has been achieved over the years in orienting extension services to a more educational bent, the balance once again seems to be tilting away from the education function. The paper proposes that we consider both the pros and cons in addressing this issue. Extension systems have ranged from those that are very broad in scope, as in national systems, to others that are quite narrow, such as the Training and Visit System and commodity systems. With certain realities now confronting many countries it is time to re-consider the Extension "mix". While some developments may be viewed with a sense of foreboding (growing poverty, reduced financial resources), others (increasing recognition of the importance of involving civil society in development programs) provide opportunities for extension practitioners to demonstrate some of their traditional strengths.

INTRODUCTION

Agricultural extension in the formal sense, is just over 100 years old in the Caribbean having started in 1897 under the aegis of a farmer's organization, the Jamaican Agricultural Society. In general, it has been delivered mainly through the Ministries of Agriculture (MOAs) in the various countries but these systems co-exist, sometimes uneasily, with commodity and other delivery systems. During the period, many approaches have been used with varying degrees of success and thus, there is a rich body of experience and wide exposure to different viewpoints, which can provide insights on pathways for Extension in the 21st century.

In this paper: I analyze our experiences in agricultural extension in the Caribbean over time and across different models; compare them with them with concepts and practices in other countries; and suggest perspectives which could help Extension practitioners and policy makers deal with the challenges likely to confront them in the future.

THEORETICAL/PHILOSOPHICAL ISSUES

(1) The perception of agricultural extension as an institution/activity for small farmers

Agricultural extension has become most identified with the main institution that has delivered it, which largely have been the extension services of MOAs. Formal

Extension activity was initiated to reach the "peasant farmer" rather than larger plantation owners and over the years, agricultural extension has come to be viewed as an activity for the small farmer. This perception has been partially responsible for less "educational" resources including adequately trained personnel, being given to extension departments and also the tendency to assign those departments, service and other "development" functions.

The larger farmers were involved in export crops, which already benefited from a good research base, organized marketing systems and of course, a strong power base. The public extension system therefore had to "grope in the dark" with vegetable/food crops and livestock which, even up to today, is not as well served in terms of research and extension support. This position was "ratified" when commodity organizations were established to look after the export crops, which were, and still are, the main commercial crops. This trend held even for crops such as bananas that came much later on the scene. As that industry grew and became more commercialized, commodity organizations with their own research, extension, and marketing units, were established to look after the industry.

Outside of the commodity systems when large farmers needed specialized advice from the MOA they would go directly to "researchers" thus bypassing the extension system. One country felt that technology transfer out of the research stations would be enough and that there was no need for an "extension service". Many projects also incorporated technology transfer components so that national extension systems were hardly integrally involved. Thus the image of public sector extension as a major player in commercial agriculture suffered and this has somewhat tainted the image of agricultural extension as a whole. This state of affairs is also probably due partly to the way extension systems were organized without highly qualified staff and often, without strong support from research organizations.

This is different from other countries where, somewhere within the organization, there would be extension advisers who are highly qualified in different disciplines and thus, would be sought after by even by the most progressive farmers. Of course, where few qualified staff are available, the issue of how best they should be deployed becomes more critical. Extension subject matter specialists has been used in Jamaica for a long time and more recently, in Trinidad but that measure has not been sustained at a level to make a serious long-term impact. There have also been calls for unifying extension and research systems and that, no doubt would help.

I have also mentioned that national extension systems have not interacted enough with the large scale and highly commercial farmers. That is not to say that such farmers have not benefited from the state's knowledge system since they do consult researchers directly and indeed, actively lobby in various way to advance their interests. However, more deliberate efforts are needed which involve the national extension systems so that complementarities could be achieved. But, in the final analysis it might be best to look at Extension in its widest sense within a broad framework (the knowledge system idea).

Within that framework one could then determine who should play different though complementary roles and how they should relate to one another.

(2) Maintaining the centrality of non-formal education in national extension systems

Agricultural extension started in the Caribbean to provide technical information to small farmers to increase crop productivity. As governments increased their range of services to farmers, these were also passed, it would seem logically, to the man in the field, the extension officer. This led, in many instances to the marginalization of the educational function and to role conflict. Through the sustained efforts of the University of the West Indies among others much success had been achieved in orienting extension services to a more educational bent. However, the balance seems to be tilting once again away from the communication/education function at a time when these should be heavily emphasized.

The idea that extension systems should focus heavily if not solely on educational/communication functions has never been bought completely by many of the stakeholders and there are pros and cons. First I discuss some of the pros with specific reference to the Caribbean context. Having one person deliver the different but related "products" could result in better coordination of functions as compared to different people doing them. It could also be seen as better use of scarce manpower resources. Questions also arise as to, to what extent could extension field staff be fully occupied especially when things are slow as in the dry season for rain fed agriculture. Second, aside from information, farmers have many tangible needs that might be more pressing and that are not being addressed by other agencies. Development programs are often long-term and intangible and providing some tangible benefits could help build relationships. Indeed, it can help to make extension demand-oriented, since people may be drawn to a program initially because of the incentive provided and by this means they become exposed to the agency and its programs.

Sometimes too it is difficult to separate the educational from the regulatory or service aspects of a "package" and having different individuals deliver the different "parts" of the message might severely truncate the message. Such considerations will become more salient as concerns on the effect of agriculture on the environment increase, and extension agencies become more involved in promoting sustainable agriculture. Finally it is an established principle in marketing that free samples and the like help in the adoption of the product. Similarly, those who provide such incentives when promoting the technology are likely to be more successful.

Now I examine some of the cons. First, when an individual is required to carry out a multiplicity of functions some are bound to suffer. Those, which require continuity of effort in a carefully sequenced fashion, which of course is the essence of good extension programming, are likely to suffer. Those, which are more routine and discrete, are likely to gain precedence. Thus, educational programs that could help may become peripheral rather than a core activity. There is also a danger in how both farmers and policymakers perceive the nature of Extension. In the eyes of the latter group Extension comes to be perceived as a routine "simple" activity and the respect as well as the resources given to it suffers. Similarly, farmers understanding and vision of Extension and what it can do are limited and thus, their demands are made within that limited framework. There could also be a problem with the compatibility of functions.

Obviously, a regulatory role i.e. as an "enforcer" is incompatible with what has been referred to by Mosher (1978) as the "encouraging companion" role that extension agents often need to adopt. .

In looking to the future I am inclined to be sympathetic to the viewpoint expressed by Professor Eugene Bortei-Doku, a former Head of the Extension Department of the University of Ghana. In an article a few years ago, in which he discussed the problems, Ghana has had trying to establish a "true" extension service i.e. one that has a purely educational focus, he concluded as follows;

> *An extension recipe for the Third World should be a quantity of educational service, supported by the needed inputs of direct services to satisfy the farmer with his requirements for increasing his productivity. (Bortei-Doku, 1989, p. 35).*

At the same time, governments could encourage farmers and community organizations to gradually assume the responsibility for conducting some of these activities

(3) Scope of Extension programs

Early Extension activities and indeed, many later on as well, could be characterized as "technology transfer". However, as other influences began to permeate the system, the notion that Extension is really more than technology transfer began to firmly take root. This line of thought fuelled the tendency to place the heavy responsibility for rural development on the shoulders of Extension, which, of course was always difficult to meet given the human and material resources in the public system. This resulted in the perception that the public system lacked focus and was largely to blame for the lack of successes in "raising the standard of living of rural peoples" as enshrined in many definitions of extension. The emergence of commodity extension services and the return to strict technology transfer mode of public extension services as in the Training and Visit System was perhaps an over-reaction since the affordability of those have come into focus. The desirability of maintaining such a stance too is also in question given the existence of large-scale poverty in many countries that require more holistic developmental approaches. In looking toward the future, therefore, the Extension "mix" has to take these realities into account.

The issue just discussed has always been a dilemma for the general or national Extension services whose clients include a large number of small farmers ranging from semi-commercial to limited-resource or subsistence farmers. To what extent should they "fill the rural vacuum", to use the words of Mosher (1978), or should they concentrate solely on agriculture? In some countries, particularly where the governments are considering cost recovery mechanisms, a stratified approach has been used so that appropriate programs could be developed according to farmers' needs. Thus, a broader based human resource type of project would be developed for the limited resource farmers while specialized technology or expert services will be provided, usually at a fee, for the highly commercialized farmers. If some sort of stratified approach is used, attention must carefully be given to articulation among the various strata and, all should come under the umbrella of the national extension system.

(3)The issue of "multiple actors" or " providers" of Extension

There are now several agencies performing some of the roles which, formerly were primarily in the domain of the public sector extension services. In the areas of technology transfer some of the major other "providers include:

(1) the private sector – input suppliers, agro-processors and consultants;

(2) national, regional, and international institutions involved and research and development activities; and
(3) farmer associations

Much has been made of the fact that people go directly to input suppliers for advice. Some have interpreted this as a bad reflection on the public extension service. However, it is logical to a certain extent for that kind of interaction to occur. It is well to keep in mind also that the range of credible advice would generally be limited to products and services provided by a particular supplier. However, one recognizes the danger of uncritical acceptance of advice even from the most well meaning input supplier, and the public sector Research and Extension systems have a serious responsibility to ensure that the welfare of farmers and the public is well served.

NGOs have been rapidly increasing in numbers, scope and influence. Their activities cover a broad range from agricultural research to rural development (Seepersad, 1996). Their direct involvement in agriculture in the Caribbean has not been as widespread as in other countries but their influence is growing. In general though, none of these other providers can assume or usurp the role of general extension in terms of their breadth of coverage, their long experience in working with people and knowledge of the rural setting, and even, the close relationships and contact it enjoys with its traditional audiences. Indeed, one can argue that the role of public sector Extension has become more difficult.. Coordination and overseeing are likely to grow as important roles for the public sector. The overall picture should be a brighter one since now, there are more opportunities from which farmers can benefit. Success, however, will depend on the attitudes and approaches of the various agencies. Obviously, it would be better if they see themselves as partners rather than competitors. Some success is already being achieved as regard collaboration, on an informal and *ad hoc* basis, and perhaps what is needed is to structure and expand such relationships.

It is also an opportune time to revisit the way we conceptualize the role of Extension, Research, and the Farmer, and the relationships among them. These should be seen as functions that are performed in an Agricultural Knowledge and Information System as proposed by Roling and Engel (1991) among others. Different entities may be involved in the delivery of one function and all have a stake in the performance of the overall system. Thus, researchers become more conscious and take into account the problems at the utilization end so that user-friendly and appropriate technologies are developed. The transfer or communication aspects are also incorporated. Similarly Extension must be concerned with the research process and products. This way of thinking then is likely to foster stronger Research-Extension-Farmer linkages and develop synergies among the various stakeholders..

While what we have just discussed refers primarily to technology transfer a similar pattern has emerged in the developmental arena. As governments are forced to address the growing social problems of unemployment, poverty, and crime, special agencies have been created and existing ones strengthened to lead thrusts in many thematic and geographical areas. Trinidad and Tobago has a government ministry with a specific mandate for social development and related areas. Another agency is responsible for training youth so they become more employable and yet another, for promoting small business development. Many NGOs and community organizations have also come on the scene. Here, again Extension has the opportunity to lead their clients to a wider range of resources.

(4) Alternative forms of Extension

The issue of privatizing Extension has been broached on occasions in the Caribbean although no serious moves have been made, as yet in that direction. It is not an entirely new idea to the region since, a farmers' organization was solely responsible for the Extension Services in Jamaica for over 50 years and commodity organizations are also private sector in essence. Given the current status of farmers' organizations, it does not seem that they could shoulder heavy research and extension responsibilities. Some Ministries of Agriculture have highly qualified staff within their ranks who, due to limited resources, are unable to undertake some programs that could benefit many farmers. In such instances, some degree of commercialization might well prove to be of mutual benefit to all parties.

One aspect among others mentioned by various writers, that would have be to be carefully considered is to what extent privatization will affect the willingness of those in the agricultural sector to share information that could eventually be "sold". Collaboration among various agencies and individuals will be key to a forward thrust in agriculture and rural development and anything that is likely to impede that process should be avoided.

EDUCATIONAL IMPORTANCE

Trade liberalization and other global developments have created new challenges for agriculture. Appropriate responses must be made based on a careful analysis and reflection on the root causes of the situation. A rush to judgement based on casual or biased perceptions can lead to "throwing out the baby with the bath water" a predicament that might easily befall Extension in some instances. The paper draws from Extension theory and practice to suggest guidelines for charting the future.

REFERENCES

Bortei-Doku, E. (1989 What is extension? Ghana's experience, *AERDD Bulletin*, 26 March, 1989, 34-35.

Mosher, A.T. (1978) *An Introduction to Agricultural Extension*, Agricultural Development Council, Singapore, 114 pp.

Roling, N. & Engel, P.G.H. (1991) The Development of the Concept of Agricultural Knowledge Information Systems: Implications for Extension in: *Agricultural Extension: Institutional Evolution and Forces for Change* (ed. Rivera, W.M. & Gustafson, D.J.), Elsevier, New York.

Seepersad, J. (1996) The Role of Non-Governmental and Community Based Organizations in Sustainable Agricultural, Forestry and Fisheries Development in: *Proceedings of the Eighth International Field Workshop,* Department of Agricultural Economics and Extension, UWI, Trinidad & Tobago, 10-15.

LINKING EXTENSION TO HOMEMAKERS: IDENTIFYING PREFERRED COMMUNICATION METHODS

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ABSTRACT

The roles and information needs of homemakers, a traditional Extension audience, have changed in recent years. However, research has not been conducted to determine what those needs are and how Extension can best address them. To determine the family and consumer issues important to homemakers and communication methods preferred by them, six focus groups were conducted throughout Kansas. Participants were asked about their most important family and consumer issues, current use of and attitudes toward mass media, and current use and attitudes toward Extension. Results indicate that homemakers are concerned about having strong families and relationships and developing consumer skills. Most participants were users of mass media but did not consider much of it trustworthy. Extension users think its information is reliable and accurate but saw a need for increased publicity and convenience in Extension. Many participants were unaware of Extension and its services. These results can be used to develop communication methods that will effectively deliver important family and consumer information to homemakers.

INTRODUCTION

The role and information needs of homemakers, a traditional audience of Extension, have changed during the last 30 years. However, it has been 30 years since any research has been conducted to determine how Extension can best meet the needs of homemakers, who are defined for this study as grocery purchasers and/or child-care providers in the home. Kiser (1968) researched the information needs of young homemakers and their preferred methods of receiving information in Florida and found at that time special interest courses were the preferred method for receiving information about family and consumer issues. Families' hectic schedules today make it hard to attend courses and meetings.

While similar studies are lacking for homemakers, numerous studies have researched communication preferences of other Extension audiences, especially farmers. Obahayujie and Hillison (1988) determined that Virginia beef farmers rated clinics among the lowest as information dissemination methods. Other studies asking specifically about farmers' information sources for environmental issues found on-farm demonstrations, tours, meetings were the most preferred information sources (Bruening et.al., 1992; Bruening, 1991). A study of North Carolina farmers found that they prefer self-directed delivery methods and view these methods as convenient, complete, and timely (Caldwell & Richardson, 1995).

Obahayujie and Hillison (1988) stated these studies could have implications for other Extension programs. "The clientele served and its unique characteristics must be kept in mind. The methods used must coincide with the maturity, education level, background, and objective of the audience being served. When agents use methods compatible with their clientele, they'll be both more effective and efficient" (p. 2).

Richardson and Mustian (1994) also discovered the importance of targeting information specifically to the audience and subject matter. "Perhaps the strongest message that clientele gave for preferring certain delivery methods was the importance of its relevancy and specificity to their individual needs." (p. 31) While Extension produces vast quantities of information relevant to homemakers, the traditional methods of delivery may not be meeting their needs today.

PURPOSE

The purpose of this study was to determine the information dissemination methods most preferred by Kansas homemakers. The objectives for this project included the following:

1. To identify and evaluate communication methods preferred by Kansas homemakers.
2. To identify and evaluate family and consumer issues that concern Kansas homemakers.
3. To determine methods to improve effectiveness of reaching Kansas homemakers.

METHODS

The paucity of literature in this area elevated the need for grounded theory developed with homemakers (Strauss & Corbin, 1990). The study used qualitative methods to provide rich data (Patton, 1990). Focus groups were the qualitative method selected because they allow for group interaction and can provide insight into why opinions are developed and held (Krueger, 1994). Six focus groups were facilitated in four geographical locations in Kansas with both rural and urban communities. Participants were identified with the assistance of county Family and Consumer Science Extension Agents, other personnel of Kansas State University, and community leaders. The focus groups were facilitated using techniques identified by Krueger (1994). Each group was recorded with a tape recorder and then transcribed. Data were analyzed using conceptual matrices, a technique identified by Miles and Huberman (1994).

RESULTS AND CONCLUSIONS

Each focus group included seven to ten participants. Two of the groups were specifically targeted toward senior citizens, while another consisted of Expanded Food and Nutrition Education Program participants. Another group targeted stay-at-home mothers. Each group expressed excitement about being "heard" regarding their informational needs. Both Extension users and non-users were included.

Family and other relationship issues often were mentioned as the issues most important to the participants. Many of the participants were concerned about balancing their responsibilities and finding time for family. One participant said, "Time for me to do justice to my career. To do justice to my children and manage to be in community service. I'm every day having to chose between one or the other of those things." Other important issues included consumer skills and buying quality items at reasonable prices. While many concerns were similar across groups, differences were found among younger and older audiences and middle-income and low-income groups. Stay-at-home mothers also had concerns that differed from the other groups. These included finding personal fulfillment, understanding their roles as homemakers, and dealing with how society viewed them as stay-at-home mothers.

Mass media, including television, radio, magazines, and newspapers, were used regularly by all groups. However, most participants said they used these sources only as awareness tools and turned to other resources for in-depth information. Most participants trusted written material from sources other than mass media. Participants who were familiar with Extension mentioned their materials and meetings when asked how they would prefer to receive information. Newsletters were a source of information, but most participants did not read mail they had not asked to receive. Table 1 illustrates these data.

The EFNEP group varied from the other groups in information sources used. They mentioned using the phone directory and making phone calls to find information and relied more heavily on mass media, particularly television. This group emphasized trying to learn the "system" or how to access information. The EFNEP participants said learning from someone (friends, neighbors, community leaders) who knew about information sources was very important. One participant stated, "Because most of the time newspaper and radio or TV won't give it to you. I asked a lady I knew who'd been through the system. She had to hand-feed me."

Previous literature has noted that mass media is used at a knowledge stage or as an awareness tool (Rogers, 1983; Lionberger & Gwin, 1982; Fett Shinners-Gray, Schlitz, Duffy, & Doyle, 1991). In general, this was true among Kansas homemakers as well, although the EFNEP participants placed more value on mass media. While they used mass media frequently, Kansas homemakers did not consider media trustworthy, which is similar to other recent findings of citizens' ratings of media trustworthiness (Nicholson, 1998). Responses about trust of mass media included: "I don't really think I trust any of them;" and "I think it's a matter of educating yourself from all those sources. I just take everything with a grain of salt and make my own presumptions." Table 2 illustrates the data regarding mass media use.

Most participants other than the EFNEP group members and the stay-at-home mothers were familiar with Extension, although most were not familiar with the breadth of subjects covered by the agency. All who were familiar with it viewed Extension as a reliable source of family and consumer information. Those who had the most interaction with Extension were most likely to consider its information to be accurate. One participant said, "If I want something that's trustworthy and that I think is factual, I go to the Extension Service and ask for it."

Among Extension users, the service is viewed as delivering a wide variety of reliable information. One participant stated, "They've got a wealth of ideas, and you can check out so many things from them and use it. I probably haven't even tapped the mountain of it from what I used." Another said, "When you talk trust, I've always trusted the information that I've gotten from K-State, from Manhattan through Extension, because I knew it'd been researched. It was tested and could be trusted." Table 3 contains data related to Extension use and suggestions.

Most participants did not contact the Extension Service more than once a month, and many mentioned they used it much more when they had children who were involved with 4-H. Many of the senior citizens were involved with Family and Community Education Units. However several did not think the units were as effective as they used to be. "Extension used to have a good vehicle for women in Extension units. But they messed those up when they started charging to belong." "But right now it seems like our lessons in the unit haven't been that interesting."

The EFNEP group was not familiar with Extension and had not been in contact with the service except through the EFNEP agent who met with them weekly through a general education class. In fact, this group was unaware of the EFNEP educator's tie to Extension.

Even though most of the stay-at-home mothers were aware of the Extension service, they were not familiar with how to use its resources and primarily associated it with agriculture and horticulture. Some responses regarding Extension were: "Where is the county Extension office?" and"I don't really know all the information services they have. I only know they deal with food and there are plant people on the radio." Both the stay-at-home mothers and the EFNEP group did not know how to contact Extension. In order for them to use its services, they said they must be able to reach Extension quickly and conveniently.

Print media were the preferred information format from Extension among all groups. Participants said print sources are simple to receive and easy to keep and refer to later. They also like being able to call or visit the Extension Office and ask for information specifically. Most participants said they would use a toll-free telephone helpline. Information topics desired from Extension ranged from information about food preparation to family communications.

The participants also had several suggestions for improvement of Extension services. They thought more people in their community should be made aware of Extension. One participant said, "In other words, if you know about Extension, you know about Extension. But then you've got the other 80 percent that has no clue what KSU Extension is." Participants also said extended office hours during evenings or Saturdays would make Extension more convenient, and Extension should utilize technological advances such as the Internet. The senior citizen groups noted that extension had eroded its program by eliminating material for traditional homemaker arts, such as cooking and crafts, because homemaking was no longer valued.

Conceptual matrices were used to analyze and illustrate the data (Miles & Huberman, 1994) and are attached to this paper.

EDUCATIONAL IMPORTANCE

This study examined an audience that has not been studied recently. As demonstrated by the participants' eagerness to be involved, they value family and consumer information.

These findings can be used to improve communication with homemakers. Home Economic Units (also called Family and Community Education units) are one of the traditional methods Kansas Extension used to present information to homemakers. However these units are aging and not attracting younger members. Alternative ways to present information to this audience must be found. Extension services can evolve and utilize various communication methods to meet the homemaker's need for reliable and trustworthy information.

Table 1. Clustered Summary of Participants' Responses

Major Information Sources and Preference

Topic	Subgroup	Type of Comment	Illustrations
Current Sources Across All Groups	Across all groups	• Newspaper • Magazines • Television • Radio • Library • Other people	"I get most of my information from magazines and newspapers." "I have my kitchen and dining room set up so I can watch TV while preparing meals." "What I do if I want to get any information is when I am in my car or in the bathroom, I turn on the radio for news." "I like to get information on a one-to-one basis. I get a lot of information visiting with my friends and neighbors."
	For low-income group	• Phone book	"First I tried the phone book. Tried to call up state, city places." "I have no family and people have problems understanding me because of my accent. So I found the telephone directory, copied addresses and found help."
Attitudes Toward Current Sources	Across all groups	• Lack of information • Difficult to find information	"Sometimes I wonder if some of the places we're sent to, it's like you hit road blocks a lot. It's supposedly there. I wonder from the responses that we get sometimes."
	For low-income group	• Important to find someone who knows the "system" (or how to use traditional information sources)	"Because most of the time newspaper and radio or TV won't give it to you. I asked a lady I knew who'd been through the system."
	For stay-at-home mothers	• Media doesn't report family and stay-at-home mothers issues • Media is often critical of mothers • Difficult to find knowledgeable source	"Not too many places talk about the stay-at-home mom. In those magazines I read, it's all about how to juggle work and family. It's all about that. Never anything about stay-at-home moms." "You're taught in media if you make one mistake that they're going to be in therapy when they're older. And those are things I don't need to hear because they work at my self-esteem, chipping it away." "If someone is actually out there working, telling me about my life, well what do they know about my life? They work."
Preferred Information Sources	Several mentioned	• Extension • Library • Television • Computers • Books • Magazines • Newspapers	"I think we're going to have to plug in to all the technological things." "I'd probably need to read it so I could stop and start and go back and look up."
Trust of Mass Media	Various responses	• Distrust of any media • Form own opinions from various media • Trust and distrust of print sources • Consider source of information • Trust television as only source • Trust Extension if familiar with service • Consider many sources biased	"I don't really think I trust any of them." "I just take everything with a grain of salt and make my own presumptions." "So I think many times it's the author of the article or the sources from which they gain their information that we need to look at." "Mine would have to be the TV because that's all I watch. News on TV and stuff like that."

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Table 2. Clustered Summary of Participants' Responses

Mass Media Use

Topic	Subgroups	Type of Comment	Illustrations
Magazines	Use of	• Women's • National home, garden and food • Country/rural home and garden • Special interests • Farm/livestock • News	Women's Day, Ladies Home Journal, Good Housekeeping, Better Homes and Gardens, Bon Appetit, Country Living, Taste of Home, Country Woman Readers' Digest, Parents, sewing magazines, craft magazines Time, Newsweek
	Attitudes toward	• Good source of family and consumer information • Parenting magazines are not a good source of information • Not much use in low-income group	"If you want to talk about finding out about new products and new services for families, that's about the only place." "Used to [read Parents] with the first child. After that I decided that I knew more than they did."
Newspapers	Use of	• Most read regularly • Most subscribe to local daily or weekly paper, except for low-income group	"I get the local daily because really that's one of our only sources for local news."
	Attitudes toward	• Source of local news and current events • Not a source of family and consumer information	"I usually read the paper to find out what's going on." "For how to raise my family, I don't read the newspaper."
Television	Use of	• Newsmagazine • Morning television • Public television • Talk shows • Local news • Some have limited selection -- rural areas	"I like the newsmagazine programs, too." "I mainly watch the news or Channel 11 [PBS]." "When the kids are not around I watch Oprah."
	Attitudes toward	• Background noise • Easy to watch and do something else at same time	"I just turn it on. I don't even know what shows are on." "The good thing about TV is it's passive. You can be doing something else and half-way watching it."
Radio	Use of	• Talk shows • National Public Radio	Paul Harvey, Dr. Laura Schlessinger, Mike Murphy, Saturday morning call-in shows
	Attitudes toward	• Varies from major news source to not a source at all	"My major source of information is the radio -- AM talk station." "If I'm in the car I'll listen to it. I don't listen to radio at home."
Unwanted Mail	Attitudes toward	• Look at it and throw away or throw away without looking	"I throw it away without reading it."
Internet	Use of	• Few have access • Source of research or consumer information	"If I have a very specific question, I'll go and try to research it."
	Attitudes toward	• Don't use regularly or extensively • Has a wide variety of information • Will be a source in future • Difficult to use with children	"I like to use it as a research spot." "If you want to sit down at the computer, and you've got anywhere from a 2- to a 6-year-old, and you start typing or playing with the mouse, they're right there. And you just turn it off and walk away. It just isn't possible."

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Table 3. Clustered Summary of Participants' Responses

Extension Use and Suggestions for Improvement

Topic	Subgroups	Type of Comment	Illustrations
Extension	Awareness among stay-at-home mothers	• Not familiar with the Extension service • A few used the service	"Where is the county Extension office?" "I don't really know all the information services they have. I only know they deal with food and there are plant people on the radio."
	Awareness among low-income group	• EFNEP agent visits class once a week • Not aware of Extension at all	"I don't know what EFNEP is." "How does is work?"
	Frequency of use among other groups	• Varied from weekly to several times a year • Use on an as-needed basis • Some used more when children were in 4-H • Read agent's news columns	"I use it on a constant weekly basis." "If there's a need I do call, but I don't think I call once a month." "I can't say that I do at all anymore unless something comes up because my kids are grown and not in 4-H." "I read [columns by horticulture agent] and clip it out."
	Type of information received	• Topics include gardening, preserving, health issues	"It's also nice when you're gardening to be able to call the Extension service because you can ask them some really strange questions and they'll usually have a good answer." "Last summer I had a great-granddaughter visit that was diabetic. I went to Extension to get information about that."
Attitudes Toward Extension	Among stay-at-home mothers	• An agricultural service • A source of clear and reliable information	"When I think of Extension I think of a grain elevator." "Everything I've gotten from them has been in layman's terms, short and to the point."
	Among Extension users	• Can trust Extension • Has wide variety of information	"When you talk trust, I've always trusted the information that I've gotten through Extension, because I knew it'd been researched. It was tested and could be trusted."
Problems With Extension	Complaints among those involved in FCE	• Disagree with changes made in program • Believe programs aren't as convenient or interesting as they used to be	"We used to be the Extension Homemakers Unit, and they changed our names. There again it was changed because they felt like homemakers don't do anything." "But right now it seems like our lessons in the unit haven't been that interesting."
	Complaints among all groups	• Inconvenient hours • Contact information hard to find	"I send a lot of people over there, but the one problem I find with the people is the hours. Most of them are working people and there's no way for them to get in there." "Trying to find them in the phone book is a real challenge."
Preferred Information Formats	Print media	• Prefer newsletters and other publications • Do or would read articles in local newspapers	"Newsletters and articles in the paper are the best source in this geographic area." "If it comes in a newsletter I'm more apt to read it."
	Videos	• Mixed opinions on effectiveness of videos	"Seems like you don't have time to sit down and pay strict attention to the video." "If I can check out a video and take it home and put it in the VCR, I don't have to do a thing. I just watch it."
	Other forms	• Ask specifically for information • Might use a 1-800 helpline	"I like to be able to go down there and say I have a topic that I need some information." "I've seen the time when I wished I had one [800 helpline]."

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REFERENCES

Bruening, T.H. (1991). Communicating with farmers about environmental issues. Journal of Applied Communications, 75 (1), 34-41.

Bruening, T.H., Radhakrishna, R.B., & Rollins, T.J. (1992). Environmental issues: Farmers' perceptions about usefulness of informational and organizational sources. Journal of Agricultural Education, 33 (2), 34-42.

Caldwell, A.E. & Richardson, J.G. (1995). Preferences of a traditional Extension audience for self-directed delivery methods. Journal of Applied Communications, 79 (4), 31-40.

Fett, J., Shinners-Gray, T., Schlitz, R., Duffy, K., & Doyle, C. (1991). Evaluations of a county Extension Office's use of mass media and newsletters: A users perspective. Bulletin 45. Department of Agricultural Journalism. University of Wisconsin-Madison.

Kiser, L. A. (1968). A study of young homemakers' perceived needs in home and family living and their preferred methods of receiving information in Orange County, Florida. Unpublished master's thesis North Carolina State University, Raleigh.

Krueger, R. A. (1994). Focus groups. A practical guide for applied research. Thousand Oaks, CA: Sage Publications.

Lionberger, H.F., & Gwin, P.H. (1982). Communication strategies: A guide for agricultural change agents. Danville, IL: The Interstate Printers & Publishers.

Miles, M.B., & Huberman, A.M. (1994). Qualitative data analysis. Thousand Oaks, CA: Sage Publications.

Nicholson, J. (1998). News industry anguish over crumbling credibility. Editor & Publisher, 131, 29.

Obahayujie, J., & Hillison, J. (1988). Now hear this! Delivery methods for farmers. Journal of Extension, 26, 1-3.

Patton, M.Q. (1990). Qualitative evaluation and research methods. Newbury, CA: Sage Publications.

Richardson, J.G., & Mustian, R.D. (1994). Delivery methods preferred by targeted Extension clientele for receiving specific information. Journal of Applied Communications, 78 (1), 23-32.

Rogers, E. (1983). Diffusion of Innovations. New York: The Free Press.

Strauss, A., & Corbin, J. (1990). Basics of qualitative research: Grounded theory procedures and techniques. Newbury Park, CA: Sage Publications.

A COMPARISON OF VOCATIONAL EDUCATORS' PERCEPTIONS REGARDING THE PURPOSE OF VOCATIONAL EDUCATION PROGRAMS IN ZIMBABWE'S HIGH SCHOOLS

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Abstract

This study sought to establish and compare the perceptions of program implementors (vocational teachers, teacher educators, and program managers) regarding the purpose of the vocational education program in secondary schools. Data for this study were collected in Zimbabwe, using a 40-item researcher designed questionnaire. Respondents indicated the extent to which they perceived each of the stated purposes of vocational education was currently emphasized in the program and the extent to which each of the same stated purposes they perceived to be ideally emphasized in the program. Substantial to extreme differences were found on the groups' perceptions as the program currently operates, while substantial to slight differences were found on the groups' perception of the program as it should ideally operate. The study recommends that the Ministry of Education 1) checks for sources mixed messages in vocational education policy documents, and 2) consider changing the future purpose of the program or changing the vocational educators perceptions toward the purpose of vocational high school programs through national debates, training seminars or conferences.

Introduction

Over the years, education, particularly vocational education has been seen as a tool for servicing the developmental needs of society. Education philosophers who believe this, feel the social, political and economic world outside the school can be changed, if not completely, then partly, by introducing vocational education in the content of education (Mandebvu, 1989). Many countries have introduced vocational education as part of the formal school system but, according to Strong (1990), the most debated issue, particularly at the secondary school level, has been the purpose of vocational education.

Vocational education programs at the secondary school level serve numerous purposes. The purposes range from narrow skill training, aimed at providing individuals with occupational skills for employment in specific jobs or a cluster of jobs to enhancing general education (Bottoms, 1989; Little, 1992; Miller, 1985). Traditionally, training received in high school vocational education programs provided the skills and competencies necessary for gainful employment upon completion of the program (Burnett, Harrison & Miller, 1984). However, several studies indicate a large number of former students of vocational education programs entering occupations not related to their specific area of training received (see studies by Bass, 1969; Hayles, 1963; Edington & Hill, 1964; Kotrlik, 1980; Lamers, 1971, as cited in Burnett et al., 1984). In addition, technology in industry has developed from the artisan-craftsman stage, with emphasis upon manual skills, to the factory system operated and controlled by man (McClurkin, 1996). This has led to increasing demand that the workforce be multi-skilled and capable of learning new skills more rapidly (Brand, 1992).

Developed and developing countries, have responded to the trend in industry by shifting the focus of vocational education programs from labor-specific programs to vocational education programs of a general nature. However, the strategies for implementing the shift in program focus have varied from one country to another. In Zimbabwe, the same professionals for the labor-specific program are implementing the new program. The professionals were not retrained despite the expressing need (Nyagura & Reece, 1990), thereby making the implementation strategy questionable. As in many instances, such an implementation strategy has created confusion among educators to the extent that they are uncertain of their role (Strong, 1990). Since program implementors (vocational educators in this case) can greatly influence the curriculum offered and/or followed in the schools, having implementors who are unsure of their role is detrimental to the success and development of an educational program (Schumacher & Kahler, 1989). Therefore, if any growth of the program is to be expected, and if the new program is to implemented effectively, it is important to establish whether Zimbabwe's vocational education professionals share a common understanding of the purpose of the vocational education program they are implementing.

Purpose of study

The purpose of this study was to establish and compare the perceptions of three groups of vocational education professionals in Zimbabwe (vocational teachers, vocational teacher educators, and program managers for high school vocational programs) regarding the purposes of high school vocational education programs in Zimbabwe. Specifically, the study sought to:

1. Determine the current emphasis placed on each of the stated purposes of vocational education as perceived by each group of vocational education professionals.
2. Determine the emphasis which should ideally be placed on each of the stated purposes of vocational education as perceived by each group of vocational education professionals.
3. Compare the perceptions of the three groups of vocational education professionals regarding the purposes of vocational education programs in high school.

Methodology

The target population for this study was vocational education professionals (vocational education teachers, teacher educators, and program managers for high school vocational education programs). The vocational teachers were all from one district while the teacher educators were from three technical teacher colleges in Zimbabwe. The sub-population for program managers included all secondary school vocational education program managers from every educational region in Zimbabwe. Data for this study were collected in Zimbabwe from 452 two vocational education professionals (397 high school vocational teachers, 39 teacher educators, and 16 vocational program managers).

The data were collected using a 40-item researcher-designed, closed-form questionnaire with a Likert-type scale, and through informal interactions with respondents. The questionnaire had two sections to determine the current and ideal emphasis. Each of the sections had 20 statements on purposes of vocational education (ten general education items and ten technical education items). In the ideal emphasis section, the statements of purposes were reordered to avoid influencing the respondents' choices. Content validity for the instrument was established using a panel of experts. Respondents rated the extent to which they perceived each of the stated purposes of vocational education to be currently or ideally emphasized in the high school vocational education program, according to the following five point scale: "1 = Not emphasized;" "2 = Slightly emphasized;" "3 = Somewhat/moderately emphasized;" "4 = Emphasized;" and "5 = Strongly emphasized." The questionnaire was hand delivered to the vocational teachers and teacher educators, and was mailed to the program managers.

Results

Current Purposes as Perceived by the Vocational Educators

Table 1, presents the mean responses and ranking (in parentheses) for each item regarding current purposes of vocational education, as perceived by the three groups of vocational educators. In terms of the highest rated items, the vocational teachers rated the following: "Develop in students an interest towards trade or craft oriented work" (mean = 4.47); and "Develop a high degree of skill in the use of basic tools for your trade (mean = 4.45). One of these was a general education item and one was a technical education item. The teacher educators also rated the same item as their highest item. The program managers rated the same top three items as the vocational teachers but second and third ranked.

In terms of least emphasized purposes, the vocational teachers perceived the following three items: "Provide exploratory experiences related to current practices in a specific business or industry" (mean = 3.42); and "Develop technical expertise in the operation of power driven machines used in related industries" (mean = 3.36). The teacher educators also perceived "Provide consumer knowledge that enables students to be wise consumers of industrial products" (mean =2.82), and "Develop highly specialized technical skills necessary for the production of precise finished products" (mean =2.87) to be least emphasized. The program managers rated least the same item as the vocational teachers, and "Provide opportunities for the application of science and mathematics concepts in the technical fields" (mean = 2.48). While the ranking of the items (Table1, in parentheses) may vary from one group to another, the ten highest and least rated items as the program currently operates were almost the same for each group.

Table 1

Mean Responses, Ranks and Degrees of Differences on Current Purposes

Item ^{a}	Purpose of Vocational Education	Mean Response^b & Rank for Each Item			
		Teach^c	Educ^d	Mgr ^{e}	Diff ^{f}
5(G)	Develop in students an interest towards trade or craft oriented work	4.47 (1)	3.82 (1)	4.31 (2)	0.65••
13(T)	Develop a high degree of skill in the use of basic tools for your trade	4.45 (2)	3.69 (4)	4.00 (3)	0.83•••
4(G)	Develop technical skills of a general nature such as measuring, planning, drawing etc.	4.36 (3)	3.72 (2)	4.56 (1)	0.84•••
18(T)	Develop technical skills to a degree where the students are self-reliant.	4.28 (4)	2.97(17)	3.31(12)	1.31••••
1(G)	Provide career education to assist students in making informed and meaningful occupational choices.	4.25 (5)	3.13(10)	3.50(19)	1.12••••
20(T)	Prepare students for enrollment in highly skilled post secondary school technical education programs.	4.15 (6)	3.56 (5)	3.69 (7)	0.59••
15(T)	Develop safety skills related to a specific occupation.	4.09 (7)	3.72 (3)	3.50 (8)	0.59••
3(G)	Develop human relation skills that will enable students to work cooperatively with others in various fields.	4.08 (8)	3.23 (7)	3.44(10)	0.85•••
6(G)	Develop general problem solving skills related to job situations.	4.05 (9)	3.18 (9)	3.13(14)	0.92•••
12(T)	Develop in students basic home skills useful in the home or for leisure use	3.94(10)	3.03(13)	3.75 (4)	0.91•••
19(T)	Develop highly specialized technical skills necessary for the production of precise finished products	3.91(11)	2.87(19)	3.13(15)	0.78•••
11(T)	Develop manipulative skills for the purpose of fitting persons in specific industries	3.77(13)	3.00(15)	3.69 (6)	0.77•••
16(T)	Develop specific employment skills needed to enter a particular occupational field	3.74(15)	3.23(8)	3.75 (5)	0.52••
10(G)	Provide basic theoretical knowledge on key materials commonly used in Zimbabwean industries	3.76(14)	3.05(12)	3.78(11)	0.73••

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2(G)	Provide opportunities for the application of science and mathematics concepts in the technical fields	3.79(12)	3.10(11)	2.44(19)	1.35••••
9(G)	Provide consumer knowledge that enables students to be wise consumers of industrial products	3.70(16)	2.82(20)	3.19(13)	0.88•••
8(G)	Develop general technical skills applicable to various occupational clusters	3.54(17)	3.00(14)	2.88(16)	0.66••
7(G)	Provide occupational information pertaining to a broad range of occupations	3.52(18)	3.31 (6)	2.81(17)	0.71••
17(T)	Provide exploratory experiences related to current practices in a specific business or industry	3.42(19)	2.95(18)	2.56(18)	0.86•••
14(T)	Develop technical expertise in the operation of power driven machines used in related industries	3.36(20)	3.00(16)	2.13(20)	1.23••••

[a] (G) = General education item, (T) = Technical education item; [b] Mean response on a 1 to 5 scale: 5 = Strongly emphasized; 4 = Emphasized; 3 = Somewhat/moderately emphasized; 2 = Slightly emphasized; 1 = Not emphasized; [c] Vocational Teachers; [d] Teacher Educators; [e] Program Managers; [f] Diff = Greatest Degree of Practical Significant Difference
• Slight or low difference; •• Substantial difference; ••• High difference; •••• Extreme difference

Ideal Purposes of the Vocational Education Program

Table 2, presents the mean responses and ranking (in parenthesis) for each item regarding the ideal purposes of vocational education. The vocational teachers rated highest the following two items: "Develop technical skills to a degree where the students are self-reliant (mean = 4.63); and "Develop a high degree of skill in the use of basic tools for your trade" (mean = 4.56). Both items were of a technical nature. The teacher educators also rated highest the same item as the vocational teachers, and in second place rated: "Develop general problem solving skills related to job situations" (mean = 4.58). The program managers' rated highest "Prepare students for enrollment in highly skilled post secondary school technical education programs" (mean = 4.81) and in second highly place, the same purpose as the vocational teachers' second choice.

On purposes perceived to be least ideal for the vocational program, the vocational teachers perceived: "Develop in students basic home skills useful in the home or for leisure use" (mean = 4.04); "Provide occupational information pertaining to a broad range of occupations" (mean = 4.00), and "Develop general technical skills applicable to various occupational clusters" (mean = 3.93). These items were the same the program managers perceived least ideal. The teacher educators perceived to be least ideal "Provide exploratory experiences related to current practices in a specific business or industry" (mean =4.03) in addition to two of the items identified by the vocational teachers (see Table 2). All the means had slight or substantial differences.

Table 2

Mean Responses, Rank and Degrees of Differences for Ideal Purposes

Item[a]	Purpose of Vocational Education	Mean Response[b] & Rank for Each Item			
		Teach[c]	Educ[d]	Mgr[e]	Diff[f]
8(T)	Develop technical skills to a degree where the students are self-reliant	4.63 (1)	4.61 (1)	4.56 (5)	0.07•
3(T)	Develop a high degree of skill in the use of basic tools for your trade	4.56 (2)	4.41 (6)	4.75 (2)	0.34••
11(G)	Provide career education to assist students in making informed and meaningful occupational choices	4.44 (3)	4.55 (4)	4.63 (4)	0.19•

10(T)	Prepare students for enrollment in highly skilled post secondary school technical education programs	4.42 (4)	4.40 (7)	4.81 (1)	0.41••
15(G)	Develop in students an interest towards trade or craft oriented work	4.48 (5)	4.55 (3)	4.63 (3)	0.15•
1(T)	Develop manipulative skills for the purpose of fitting persons in specific industries.	4.40 (6)	4.16(15)	4.56 (7)	0.40••
5(T)	Develop safety skills related to a specific occupation	4.37 (7)	4.53 (5)	4.06(17)	0.47••
13(G)	Develop human relation skills that will enable students to work cooperatively with others in various fields	4.33 (8)	4.34 (8)	4.31(10)	0.03•
16(G)	Develop general problem solving skills related to job situations	4.32 (9)	4.58 (2)	4.19(13)	0.39••
14(G)	Develop technical skills of a general nature such as measuring, planning, drawing etc	4.28(10)	4.11(17)	4.06(14)	0.22•
9(T)	Develop highly specialized technical skills necessary for the production of precise finished products	4.28(11)	4.18(12)	4.06(16)	0.22•
6(T)	Develop specific employment skills needed to enter a particular occupational field	4.26(12)	4.21(11)	4.56 (8)	0.35••
20(G)	Provide basic theoretical knowledge on key material commonly used in Zimbabwean industries	4.17(13)	4.16(13)	4.25(11)	0.09•
7(T)	Provide exploratory experiences related current practices in a specific business or industry	4.12(14)	4.03(18)	4.06(15)	0.09•
19(G)	Provide consumer knowledge that enables students to be wise consumers of industrial products	4.11(15)	4.16(14)	4.31 (9)	0.20•
4(T)	Develop technical expertise in the operation of power driven machines used in related industries	4.07(16)	4.24(10)	4.25(12)	0.18•
12(G)	Provide opportunities for the application of science and mathematics concepts in the technical fields	4.07(17)	4.24 (9)	4.25 (6)	0.18•
2(T)	Develop in students basic home skills useful in the home or for leisure use	4.04(18)	3.57(20)	3.81(19)	0.47••
17(G)	Provide occupational information pertaining to a broad range of occupations	4.00(19)	4.11(16)	3.81(18)	0.30••
18(G)	Develop general technical skills applicable to various occupational clusters	3.93(20)	3.87(19)	3.56(20)	0.37••

[a] (G) = General education item, (T) = Technical education item; [b] Mean response on a 1 to 5 scale: 5 = Strongly emphasized; 4 = Emphasized; 3 = Somewhat/moderately emphasized; 2 = Slightly emphasized; and 1 = Not emphasized; [c] Vocational teachers; [d] Teacher Educators;

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[e] Program Managers; [f] Diff = Greatest Degree of Practical Significant Difference

* Slight or low difference; ** Substantial difference; *** High difference; **** Extreme difference

Comparison of Mean Responses for Each Item by Groups

The third objective compared the perceived purposes for the three groups of vocational educators. This was accomplished by comparing the mean ratings for each of the groups. However, since two of the three groups were populations and one was a sample, the use of the analysis of variance procedure would have been questionable. In addition, comparisons were to be made on a total of 40 items and the use of ANOVA would have created an unacceptably high level of inflation of experimentwise error. Therefore, the researchers chose as a preferred procedure the establishment of a scale of substantive significant differences. The use of scales of practical significance is well supported in the literature (Gold, 1969; Hays,1963; and Saladaga, 1981, as cited in Burnett, et al., 1984). The scale used in this study was developed as follows: 00 to .25 = None or negligible differences; .26 to .50 = Slight or low differences; .51 to .75 = Substantial difference; .76 to 1.00 = High difference; and 1.01 or higher = Extreme difference.

For the current emphasis perceptions, the items found to have the highest degree of difference among the groups were: "Provide opportunities for the application of science and mathematics concepts in the technical fields (difference = 1.35); "Develop technical skills to a degree where students are self reliant" (difference = 1.31); and "Develop technical expertise in the operation of power driven machines used in related industries" (difference = 1.23); and "Provide career education to assist students in making informed and meaningful occupational choices" (difference =1.12). On all four of these items, the vocational teachers rated the item highest while the lowest rating was offered by the teacher educators for two of the items and program managers on the other two items (see Table 1). Overall, four items had differences that were classified as extreme differences, nine items had differences classified as high, seven items had differences classified as substantial.

For the ideal emphasis perception, the items found to have the highest degree of differences among the groups were: "Develop in students basic home skills useful in the home or for leisure use" (difference =0.47); "Develop safety skills related to a specific occupation" (difference =0.47); "Prepare students for enrollment in highly skilled post secondary school technical education programs" (difference = 0.41); and "Develop manipulative skills for the purpose of fitting persons in specific industries (difference = 0.40). The vocational teachers and teacher educators rated one item highest while the program managers rated two items highest. The teacher educators rated three items lowest and the program managers one of the items. Overall, eleven items had differences in negligible category (.00 - .25), and nine in the slight or low difference category (.26 - .50), (see Table 2).

In examining the data, the researchers were concerned that the differences that were identified may have been the result of the application of the response scale rather than differences in perceptions. Therefore, to further examine the data in an attempt to determine if patterns of response were highly consistent, the mean ratings for each of the twenty items were rank ordered and the rankings correlated using the Spearman Rank Order correlation coefficient. It was felt that if the ranking among the groups were highly correlated (r = .70 or higher using Davis'descriptors) this would be an indication that the patterns of response in the data were consistent even if a number of differences were found in the mean ratings. The correlation found between the items rankings based on the ratings by the teachers and teacher educators was r =.60; teachers and managers r = .71; educators and managers r =.60. The same was done for the ideal items and the following correlations were found between the ratings by the teachers and educators r = .74; teachers and managers r = .71, and between the teacher educators and program managers r = .63.

Conclusions and Implications

Both the general curriculum and technical skills component items were among the highest rated items in the current perception. In addition, the mean ratings for the current purpose items for each group of educators show greater differences than the ideal items. This result indicates an existence of differences in perceptions among the groups of educators on the current program purpose. Therefore, the Ministry of Education in Zimbabwe needs to check for sources of possible mixed messages in the policy documents. Since, the professionals perceive the ideal purposes of the vocational program to be technical (based on the highest and least rated items)this observation might be reflecting the lack of re-training or re-orientation of the educators for the new program. This situation calls for the policy makers to either change the future purpose of the program or change the vocational educators perception of the new program through national debates, training seminars or workshops. Such consultations and/or interventions are important and necessary for the success of the new vocational education program.

The research methodology used and results obtained can be of use to other vocational education systems in developing countries that are facing issues of program purpose and decision making processes. The results from this study are important for the organization and smooth operation of education systems, especially the following lessons can be learnt: 1) Measuring the current program emphasis can help adjust the current or short term program direction; and 2) Measuring the ideal program emphasis can help make consensus decisions on future programming needs.

References

Bottoms, J. E. (1989). Closing the gap between vocational and academic education. (ED315516).

Brand, B. (1992). A vision for vocational-technical teacher education for the 21st century. Journal of Vocational Education Research, 17(2), 1-12.

Burnett, M.F., Harrison, B.C., & Miller, P.G. (1984). Attitudes of local schools administrators toward vocational home economics programs. A paper submitted to the American Vocational Association Conference, (December 3, 1984).

Calhoun, C. C., & Finch, A.V. (1982). Vocational education: Concepts and operations. Belmont, CA: Wadsworth Publishing Co.

Little, J. W. (1992). The compressed curriculum: Compromises of purpose and content in secondary schools. (ED342754).

Mandebvu, O. S. (1989). Pupils attitudes toward technical/vocational subjects: An exploratory study. Linkoping University, Unpublished masters thesis. (ED312421).

McClurkin, W. D. (1966). Vocational education in Utah: A survey report. George Peabody College for Teachers. Nashville, TN: Division of Surveys and Field Services.

Miller. M. D. (1985). Principles and a philosophy of vocational education. Ohio, OH: The National Center for Research. The Ohio State University.

Nyagura, L. M., & Reece, J. L. (1990). Teacher quality in Zimbabwe secondary schools. Zimbabwe Journal of Education Research, 2(3), 211-238.

Schumacher, L.G., & Kahler, A. A. (1989). Perceptions of selected policy makers and educators toward agriculture. Journal of Vocational Education Research, 14(4), 51- 69. Strong, M. E. (1990). Administrative leadership issues in vocational education. In: A. J. Pautler, Jr., (Ed). Vocational education in the 1990s: Major issues. Ann Arbor: Prakken Publications.

Session I Farming Systems Research

March 23, 1:00 - 3:00 p. m.

Session Chair - James Christiansen

Location: St. Ann's Room

TITLE: Farmers' Perception of the Agricultural Extension District Noushoro Feroze, Sindh, Pakistan Assistance in Solving Insect Pest and Disease Problems in Cotton

AUTHOR: Aijaz Ali Khooharo, Gary W. Leske, Zaheeruddin Mirani
Dept. of Applied Statistics, Sindh Agriculture University, Tando Jam, 70060 Pakistan
DISCUSSANT: Bill Haynes

TITLE: Perceptual Differences of Agricultural Production Constraints in Uganda: Merging Farmer and Scientific Knowledge for Research Agenda Planning

AUTHOR: J. Mark Erbaugh
The Ohio State University
DISCUSSANT: Bill Haynes

TITLE: Facilitating Change in Senegalese Rice Production: Learning Serer Women Farmers' Decision Making

AUTHOR: John R. Vreyens
University of Minnesota
DISCUSSANT: James Knight

TITLE: A Study of the Incentives and Barriers to the Development of New and Alternative Enterprises on Farms in Two States of the United States

AUTHOR: Dermot J. Ruane, James F. Phelan, Theodore R. Alter, Bud Crewdson
National University of Ireland, Dublin, The Pennsylvania State University and University of Minnesota
DISCUSSANT: James Knight

FARMERS' PERCEPTION OF THE AGRICULTURAL EXTENSION DISTRICT NOUSHORO FEROZE, SINDH, PAKISTAN ASSISTANCE IN SOLVING INSECT PEST AND DISEASE PROBLEMS IN COTTON

By

Aijaz A. Khooharo, Gary W. Leske, and Zaheeruddin Mirani

Introduction

Agriculture is the main contributor to Pakistan's economy. It contributes about 25% to GDP, accounts for 56% of total exports, and employs more than 50% of the labor force. In addition, it is considered as a source of labor for industrial sectors, capital for new business, revenue for the federal and provincial governments, and international trade that balances the imports required by other sectors (Mahmood & Walter, 1990). Pakistan possesses many natural resources. It has fertile land with a well-developed irrigation system, ideal and diverse climatic conditions, adequate supply of inputs, an abundant human working force, and a sufficient number of agricultural scientists equipped with modern scientific knowledge in the field of agriculture (Chaudhry, 1993). However, Pakistan has not yet been able to realize the potential yield of various crops. Consequently, per hectare yield is lower than that of many of the agriculturally advanced countries. Furthermore, the average yield of various crops is much lower than the world average.

Importance of Cotton

Pakistan is the ancient home of cultivated cotton and ranks fifth in the world for cotton production (Cotton Facts sheets, 1996). The cotton industry and cotton related services play a major role in Pakistan's economy, contributing as much as 63.9% of country's GNP. It is one of the few sectors that have acted as catalysts to further industrial growth in terms of their related industries and by-products. It has developed forward linkage in the form of textile industries, knitwear units, dying units, and garment manufacturing units (Attaché Reports, 1996). Pakistan has improved its cotton production (yield per acre) and the quality of its cotton over the past several years (M. Abdullah, 1979). However, the production fluctuates from year to year. Production levels for ten years are shown in the following table. The production in 1996 was 1532307 MT less than that of 1995. Some of the important problems the crop is facing in the county are: supply of pure seed and fertilizers, selection of varieties, water logging and soil salinity, and infestation of insect pests and diseases.

Pakistan Cotton Production 1987 – 1996.

Years	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Prod. (MT)	146818	142603	145574	163758	218093	153996	136771	147929	180188	153230

Source: FAOSTAT (1996).

Cotton is susceptible to a number of insect pests and diseases. According to a rough estimate 15 to 20 % of the crop is lost almost every year to insect pests alone and 10% to diseases. It is very difficult to identify insect pests and diseases. Moreover, a selection of proper pesticides is also a complex problem. To solve this problem, agricultural extension agents go to the fields, recognize insect pests and diseases, and recommend the proper pesticide. They also receive assistance from a Subject Matter Specialist if the problem is overly complex. A variety of information regarding insect pests and diseases and their control measures is disseminated through the press, radio, TV, monthly magazines, and brochures during the growing season.

The Problem

Agriculture is a major contributor to the Pakistan economy and quality of life. Cotton continues to be a major crop enterprise contributing to quality of life. Unfortunately, cotton production varies a great deal from year to year. While many factors contribute to variation, insects and diseases are estimated to cause about a 25% reduction in potential cotton production annually. Pakistan established the Agricultural Extension and Adaptive Research Project in 1981 to strengthen the Extension activities designed to increase, among other things, production of cotton and related economic activities. While assumptions have been made about the level of knowledge of farmers, their perceptions of helpfulness of agricultural extension in solving their problems and the helpfulness of "mass media," little research exists focused on these factors.

Purpose of the Study

The purpose of this study was to determine: (a) ability of farmers to identify insect pests and diseases of cotton and select appropriate pesticides, (b) farmers' perception of the helpfulness of agricultural extension in solving insect pest and disease problems in cotton, and (c) farmers' perceptions of the effectiveness of selected sources of information in contributing to solving insect pest and disease problems, viz. personal visits of the agricultural extension agents, TV, radio, magazines, and newspapers.

Objectives of the Study

The objectives of the study were to determine to what extent:

1. the farmers were able to recognize insect pests and diseases in cotton.
2. the farmers were able to select proper pesticide for the insect pests and diseases.
3. the agricultural extension agents were helping farmers learn to recognize the insect pests and diseases in cotton.
4. the agricultural extension agents were helping farmers learn to select the proper pesticides for the insect pests and diseases in cotton.
5. selected sources of information (such as TV, radio, magazines, and newspapers) were perceived effective in disseminating the information regarding the insect pests and diseases in cotton.
6. the above sources of information were helpful to the farmers regarding selecting the proper pesticides for the insect pests and diseases in cotton.
7. the farmers' demographic characteristics (such as age, types of farming, farming experience, educational level, and farm size) contributed to farmers' scores regarding recognizing the insect pests and diseases in cotton.
8. the farmers' above demographic characteristics contributed to farmers' scores regarding selecting the proper pesticides for the insect pests and diseases of the cotton crop.

Methods and Data Sources

The study was conducted using the sample survey method. The population of this study was all the cotton growers of district Noushoro Feroze, Sindh, Pakistan. Due to financial constraints, a random sample of 150 cotton growers was taken from the population resulting in a probability error of 8% (Wunsch, 1986). A survey interview guide was developed after the careful study of the objectives and the literature. The survey interview guide was divided into three sections: demographics, farmers' knowledge (number of correct answers out of 10 regarding identifying insect pests and diseases, and selecting proper pesticide for insect pests and diseases), and farmers' perception of value of assistance sources. Through the "yes or no" questions the researchers knew whether farmers felt: able to recognize insects pest and diseases, they were getting help from the agricultural extension agents, were listening to agricultural programs on the radio, watching agricultural programs on TV, etc. If they said "yes" that they could recognize insect pests and diseases of cotton, pictures of ten insect pests and ten diseased plants of cotton were shown to them. The correct number of answers were recorded on a scale form 0 to 10. Perception responses were gathered using Likert-type scales ranked from 1 to 10 (1 being unsatisfactory, 5 being average, and 10 being excellent). The collected data were tabulated and analyzed. Statistical techniques such as mean, standard error, t-test, F-test, and regression were used to arrive at meaningful results for pre-specified objectives.

Results and Conclusions

- To Determine to What Extent the Farmers are Able to Recognize Cotton Insect Pests and Diseases and Select Proper Pesticide and Insecticides.

Table 1. Farmers' Knowledge

Category	N	Mean	Std. Deviation	Std. Error Mean
Level at which farmers recognize insects pests	149	4.03	2.17	.18
Level at which farmers recognize diseases	147	4.12	2.15	.18
Level at which farmers choose proper insecticide	148	3.25	2.40	.20
Level at which farmers choose proper pesticides	149	3.38	2.53	.21

On the average, farmers could recognize 4.03 and 4.12 insects and diseases out of 10 respectively. If we assume 100% accuracy is the desired knowledge level for major problems, we also can conclude that the ability to recognize selected major insect pests and disease in cotton is not adequate. In addition, on the average, farmers could select 3.25 and 3.38 proper insecticides and pesticides. If we assume 100% accuracy is the desired knowledge level for major problems, the level of knowledge appears to justify the conclusion that farmers' knowledge of appropriate insecticides and pesticides is not adequate.

In order to know the relationship between farmers' scores (regarding identifying the insects pests, diseases and selecting the proper pesticides) and factors such as age, experience, educational level, farm size, help from agriculture extension agents, TV, radio, and literature, stepwise regression was applied. Each null hypothesis about the contribution of factors to enhancing farmers' knowledge was tested as follows:

- Hypothesis Testing about Contribution of Selected Factors to Enhancing the Farmers' Knowledge Regarding Identifying the Insect Pests in Cotton

Stepwise regression suggested the following subset of independent variables that influenced the farmers' knowledge regarding identifying insect pests. The model is:

$$Y_{1.1} = 2.256+0.241X_{D.7}+0.147X_{5.1}+ 0.247X_{9.1}$$

The above model reveals that education level ($X_{D.7}$), help from an agricultural extension agent ($X_{5.1}$), and agricultural programs on TV ($X_{9.1}$) had significantly positive effects on the farmers' knowledge regarding identifying the insect pests. The slopes of the above three independent variables were tested by using t-tests. Table 2 presents the significant coefficient related data. The independent variables included in the model are significant since the p values for the t-statistics are less than the significance level 0.05. Therefore, the null hypothesis that factors have no contribution to enhancing the farmers' ability regarding identifying the insect pests ($\beta_1=\beta_2=\beta_3=\beta_4=\beta_5=\beta_6=\beta_7=\beta_8=0$) was rejected. The alternate hypothesis was accepted that at least one factor has significant contribution to enhancing the farmers' ability regarding identifying insect pests in cotton (at least one $\beta \neq 0$). The results from checking the model adequacy are presented in Tables 3 and 4, the model summary and ANOVA, respectively.

Table 2. Significant Coefficients for Farmers' Scores for Identifying Insect Pests

Model	**Unstandardized Coefficients**		**Standardized Coefficients**		
	B	**Std. Error**	**Beta**	**T**	**Sig.**
(Constant)	2.26	0.39		5.84	0.00
$X_{D.7}$	0.24	0.09	0.20	2.66	0.00
$X_{5.1}$	0.15	0.05	0.21	2.79	0.00
$X_{9.1}$	0.25	0.06	0.30	3.96	0.00

Table 3. Model Summary for Farmers' Scores for Identifying Insect Pests

Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimates**
1	0.43	0.19	0.17	1.97

Table 4. ANOVA Table for Farmers' Scores for Identifying Insect Pests

Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Regression	130.59	3	43.53	11.17	0.00
Residual	565.31	145	3.90		
Total	695.89	148			

Seventeen percent of variance in farmers' scores regarding identifying the insect pests was accounted for by the three independent variables: educational level, help from agricultural extension agent, and agricultural programs on TV. Table 4 shows that the F value is 11.17 and the significant value for the model is 0.00 which is less than the significance level 0.05. Therefore, it was concluded that the model does fit. In order to know whether farming categories (landlords, peasant proprietors, and tenants) had different coefficients for the significant independent variables with farmers' scores regarding identifying insect pests, dummy intercepts and dummy slopes were included in the model. The coefficients were tested using t-tests with an alpha set at 0.05. The probabilities for t-values for dummy intercepts as well as dummy slopes were greater than 0.05, the level for significance. Neither dummy intercepts nor dummy slopes were significant. It was concluded that there was no significant difference among farming categories for identifying the insect pests in cotton. Hence three farming categories (landlord, peasant proprietor, and tenant) had the same regression equation.

- Hypothesis Testing about Contribution of Selected Factors to Enhancing the Farmers' Knowledge Regarding Identifying Diseases in Cotton

Stepwise regression found the following subset of independent variables that contribute to enhancing the farmers' knowledge regarding identifying the diseases in cotton. The model is as follows:

$$Y_{2.1} = 2.547 + 0.307X_{D.7} + 0.169X_{9.2} + 0.148X_{10.2}$$

The above model indicates that educational level ($X_{D.7}$), agricultural programs on the TV ($X_{9.2}$), and agricultural programs on the radio ($X_{10.2}$) had significantly positive effects on the farmers' knowledge regarding identifying the diseases in cotton. Based on t-test results, the variables included in the model have significance levels for their slopes of less than 0.05. Table 5 includes the significant coefficient related data.

Table 5. Significant Coefficients for Farmers' Scores for Identifying Diseases

Model	**Unstandardized Coefficients**		**Standardized Coefficients**		
	B	**Std. Error**	**Beta**	**T**	**Sig.**
(Constant)	2.55	0.40		6.37	0.00
$X_{D.7}$	0.31	0.09	0.27	3.24	0.00
$X_{9.2}$	0.17	0.07	0.20	2.51	0.01
$X_{10.2}$	0.15	0.07	0.17	2.03	0.04

The p-values for t-statistics are less than the significance level 0.05; therefore, the null hypothesis that factors have no contribution to enhancing the farmers' ability regarding identifying diseases ($\beta_1=\beta_2=\beta_3=\beta_4=\beta_5=\beta_6=\beta_7=\beta_8=0$) was rejected. The alternate hypothesis was accepted that at least one factor has significant contribution to enhancing the farmers' ability regarding identifying diseases in cotton (at least one $\beta \neq 0$). And it was concluded that three factors--education level, agricultural programs on TV, and agricultural programs on the radio--had significantly contributed to enhancing the farmers' knowledge regarding identifying diseases in cotton. To check the model adequacy, the model summary, Table 6, and ANOVA, Table 7 were calculated.

Table 6. Model Summary for Farmers' Scores for Identifying Diseases in Cotton

Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimates**
	0.37	0.14	0.12	2.01

Table 7. ANOVA for Farmers' Scores for Identifying Diseases in Cotton.

Model	**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
Regression	88.81	3	29.60	7.33	0.00
Residual	569.86	141	4.04		
Total	658.66	144			

The three independent variables contributed to predicting about 12% of the variance in the farmers' scores in identifying diseases. The F value was 7.33 and the significance value for the model was 0.00, which is less than significance level 0.05. Therefore, the conclusion is that the model does fit. In order to know whether farming categories (landlords, peasant proprietors, and tenants) had different parameters for the significant independent variables, dummy intercepts and dummy slopes were included in the model. The coefficients were tested using the t-test at 0.05 level of significance. The probability values for t-tests for dummy intercepts and dummy slopes are greater than 0.05. Neither dummy intercepts nor dummy slopes were significant. It was concluded that there were no significant differences among farming categories of farmers for identifying the diseases in cotton. Hence the same regression equation was appropriate for the three farming categories.

➢ Hypothesis Testing about Contribution of Selected Factors to Enhancing the Farmers' Knowledge Regarding Choosing Proper Insecticides.

Stepwise regression found the following subset of independent variables that contribute to enhancing the farmers' knowledge regarding choosing proper insecticides. The model is as follows:

$$Y_{3.1} = 0.295 + 0.373X_{D.7} - 0.0047X_{D.8} + 0.235X_{7.1} + 0.277X_{9.3} + 0.185X_{10.3}$$

The above model shows that educational level ($X_{D.7}$), help from an agricultural extension agent ($X_{D7.1}$), agricultural programs on TV ($X_{9.3}$), and agricultural programs on the radio ($X_{10.3}$) had positively and significantly contributed in farmers' knowledge regarding choosing proper insecticides while farm size ($X_{D.8}$) had significant negative contribution. The negative contribution suggested that the larger farm size (X_{D8}), the less farmer knowledge regarding choosing proper pesticides. However, the available literature reveals that farm size has positive significant contribution on the adoption of new technology (Dinampo,1983; Mbata, 1997). To remove this ambiguity, the boxplot of area versus farming category was plotted. The plot shows that there is one outlier in the data having 1000 acres while the average farm size was 31.67 acres.

After excluding the outlier from the data, the stepwise regression was applied again. The suggested model was:

$$Y_{3.1} = 0.237 + 0.348X_{D.7} + 0.235X_{7.1} + 0.238X_{9.3} + 0.186X_{10.3}$$

The above model shows that educational level ($X_{D.7}$), help from an agriculture extension agent ($X_{7.1}$), agricultural programs on TV ($X_{9.3}$), and agricultural programs on radio ($X_{10.3}$) had significant positive contribution to farmers' knowledge regarding choosing proper insecticides. Farm size had no significant contribution. Therefore, it was excluded from the model. In order to know whether farming categories (landlords, peasant proprietors, and tenants) had different parameters for the significant independent variables, dummy intercepts and dummy slopes were included in the model. The coefficients were tested using t-tests at 0.05 level of significance. The results revealed that probability values for t-tests for the dummy intercepts and dummy slopes were greater than 0.05 except $X_{10.3}.D_1$ (dummy slope of the contribution of agricultural programs on the radio). Therefore, different regression equations are suggested for the different farming categories.

The regressions are:

$$Y_{3.1} = 1.071 + 0.221X_{D.7} + 0.212X_{7.1} + 0.250X_{9.3} + 0.0398X_{10.3} \quad \ldots\ldots\ldots\ldots\ldots I$$

$$Y_{3.1} = -0.365 + 0.412X_{D.7} + 0.263X_{7.1} + 0.168X_{9.3} + 0.415X_{10.3} \quad \ldots\ldots\ldots\ldots\ldots II$$

$$Y_{3.1} = -0.026 + 0.442X_{D.7} + 0.199X_{7.1} + 0.378X_{9.3} + 0.193X_{10.3} \ldots\ldots\ldots\ldots\ldots III$$

The equation I was suggested for landlord category, equation II was for peasant proprietor category, and equation III was for the tenant category.

- Hypothesis Testing about Contribution of Selected Factors to Enhancing the Farmers' Knowledge Regarding Choosing Proper Pesticides.

Stepwise regression found the following subset of independent variables that contribute to enhancing the farmers' knowledge regarding choosing proper pesticides. The model is:

$$Y_{4.1} = 0.128+ 0.364X_{D.7} +0.302X_{8.1}+0 .278X_{9.4}+0.145X_{10.4}$$

The above model shows that educational level ($X_{D.7}$) , help from an agriculture extension agent ($X_{8.1}$), agricultural programs on TV ($X_{9.4}$), and agricultural programs on the radio ($X_{10.4}$) made positive significant contribution in predicting farmers' knowledge regarding choosing proper pesticides. The slopes of the above independent variables were tested using t-tests. Table 8 presents the significant coefficients. The p-values for the t-statistics are less than the significance level of 0.05. The null hypothesis that factors have no contribution to enhancing the farmers' ability regarding identifying diseases ($\beta_1=\beta_2=\beta_3=\beta_4=\beta_5=\beta_6= \beta_7 =\beta_8=0$) was rejected. The alternate hypothesis was accepted that at least one factor has significant contribution to enhancing the farmers' ability regarding choosing proper pesticides (at least one $\beta \neq 0$). It was concluded that four factors: education level, help from extension agent, agricultural programs on TV, and agricultural programs on the radio had significantly contributed to enhancing the farmers' knowledge regarding choosing proper pesticides. To check the model adequacy, the model summary and ANOVA data were calculated and are presented in Table 9 and Table 10, respectively.

Table 8. Significant Coefficients for Farmers' Scores for Choosing Proper Pesticides

Model	**Unstandardized Coefficients**		**Standardized Coefficients**		
	B	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	0.13	0.54		0.24	0.81
$X_{D.7}$	0.36	0.11	0.26	3.36	0.00
$X_{8.1}$	0.30	0.06	0.35	4.71	0.00
$X_{9.4}$	0.28	0.07	0.30	4.16	0.00
$X_{10.4}$	0.15	0.07	0.16	2.06	0.04

Table 9. Model Summary for Farmers' Scores for Choosing Proper Pesticides

Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimates**
	0.53	0.28	0.26	2.17

Table 10. ANOVA for Farmers' Scores for Choosing Proper Pesticides

Model	**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
Regression	264.29	4	66.07	13.99	0.00
Residual	670.83	142	4.72		
Total	935.12	146			

The contributing four independent variables predicted about 26% of the variance in farmers' scores regarding choosing proper pesticides. The F value (13.99) was significant given the p value for the model was 0.000 and alpha set at 0.05. Therefore, the model does fit. Neither dummy intercepts nor dummy slopes were found significant. It was concluded that there was no significant difference among farming categories for choosing proper pesticides.

Concluding Remarks

Based on this sample data, it was suggested that the cotton farmers' average scores range from 3.25 to 4.12 regarding identifying the insect pests and diseases and selecting the proper pesticides. Given the average scores were significantly less than five and did not approach 10 (the maximum level), it was concluded that the farmers were not in the position to solve insect pest and disease problems in cotton themselves. In addition, it was concluded that educational level, help from agricultural education agents, agricultural programs on TV and radio have significant impact on ability to solve insect pest and disease problems in cotton. However, it should be noted that the regression equation did not include an independent variable to measure the impact of extension trained *contact* farmers or other farmers. Unfortunately, 19.3% of farmers reported not having sufficient finance to purchase needed insecticides and pesticides.

Educational Importance

This study will provide a base for the decision makers in designing strategies to maximize the efficiency of extension agents involved in providing help to farmers regarding the identification of insect pests and diseases in the cotton crop and the selection of proper pesticides for minimizing production losses in Sindh, Pakistan. This study will also help extension services improve contact systems with farmers through the use of different sources of information such as TV, radio, and personal contacts in Sindh as these sources were found to have a significant impact on farmers' knowledge.

References

Attaché Reports, (1996). From: American Embassy, Islamabad To: USDA/FAS Washington, D.C. Available: http://www.lums.edu.pk/PAKISTAN/pakecon.htp. (1997, August 19).

Chaudhary, S. M. (1993). Individual Contact methods. In E. Bashir (Ed.) Extension Methods. Islamabad, Pakistan: National Book Foundation.

Cotton Facts Sheet, (1996). Pesticide Action Network North America (PANNA). Available: http://www.igc.org/panna/cotton.html (1997, August 06).

Dinampo, E. C., (1983). Some factors Associated with the Adoption of Rice farming Innovations by farmers cooperators of the CMU Social Laboratory. CMU Journal of Agriculture, Food, and Nutrition. 5 pp. 452-503.

Food and Agriculture Organization of the United States of America, (1996). Available: http://apps.fao.org/lim500/nph.

M. Abdullah (1979). Cotton Hand Book of Pakistan. Saifee House, Dr. Ziauddin Ahmed Road, Karachi, Pakistan: Saifee Printers & Publishers.

Mahmood, A., and Walters, F. (1990). Pakistan Agriculture. A Description of the Agricultural Economy. Islamabad, Pakistan: EAN Project Publication.

Mbata, J. N. (1997). Factors Influencing Fertilizer Adoption and Rates of Use Among Small-scale Food Crop Farmers in the Rift Valley Area of Kenya. Quarterly Journal of International Agriculture. Vol. 36 No. 3 July – September. pp. 285-301.

Wunsch, D.R. (1986). Forum Feature: Action Research in Business Education. Business Education Forum February 1986. Vol. 5. pp. 31-34.

Title: Perceptual Differences of Agricultural Production Constraints in Uganda: Merging Farmer and Scientific Knowledge for Research Agenda Planning.

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Abstract: A priori assessments of farmer constraints are now considered essential if African National Agricultural Research and Extension Systems (NARES) are to develop client-relevant research and extension programs. Contemporary approaches advocate direct participation by farmers in these assessments. An assumption that guides those advocating the efficacy of using participatory methods to assess farmer knowledge of production constraints is that farmers will identify and prioritize constraints differently from research scientists. If the assumption is accurate, then differences in constraint perceptions need to be identified and explored to improve interpretation and utilization of farmer knowledge to advance research and extension agenda planning. This assumption is analyzed using information from a 1994 survey of 583 farmers in 5 districts in Uganda, and a 1994 research review and prioritization exercise conducted with scientists from the Ugandan National Agricultural Research Organization (NARO). Results indicate that farmer prioritization of commodity specific constraints only partially differ from those provided by scientists. Farmers are more likely to specify visible biological constraints such as insects and vertebrate pests, and economic constraints such as labor and markets. Researchers are more likely to specify varietal deficiencies and plant diseases. Reconciling perceptual differences can best be done by including farmers in priority setting exercises at the time when they occur. Bias in constraint prioritization can be avoided by beginning with farmer definition of constraints or by including extension agents as knowledgeable representatives of local farmer interests. This would strengthen extensions' reverse feedback role and contribution to participatory agricultural research.

INTRODUCTION: A priori assessments of farmer constraints are now considered essential in order for African National Agricultural Research and Extension Systems (NARES) are develop client-relevant technologies (Venkatesand & Kampen, 1998; Spencer, 1991). Contemporary approaches advocate direct participation by farmers in these assessments (Chambers et.al.,1989; Roling, 1990; Ashby, 1990). Past experience with industrial research and development programs demonstrate that successful technological research and development programs are distinguished by a strong user orientation in advance of technology production (Zaltman, 1979). Permitting farmers' needs and constraints to define the demand structure for technological research and development can provide the basis for a strong user orientation.

Permitting farmers to identify constraints and using this knowledge to derive research agendas appears to be one of advocacy, not practice. A common practice is for research agendas to be determined by researchers or prescripted by National Governments in order to meet their own scientific interests or developmental objectives. Local farmer knowledge about constraints, if collected, is often either ignored or left unutilized by agricultural scientists (Chambers et.al., 1989). Scientifically derived information is considered by many to be more reliable, transferable, if not superior (Kloppenburg, 1991).

An important assumption that guides those advocating the efficacy of using participatory methods to assess farmer knowledge of production constraints is that farmers will identify and prioritize constraints differently from research scientists (Chambers, 1990). In order to justify the additional time and expenditure required to implement participatory research agenda planning this assumption needs to be validated. If the assumption is accurate, then differences in constraint perceptions need to be identified and explored. Comparing researcher and farmer knowledge will assist in the interpretation and utilization of farmer knowledge to advance research agenda planning.

METHODS & DATA SOURCES: Information from two sources are used to compare researcher and farmer perceptions of agricultural production constraints. The first is a research review and prioritization exercise conducted by the Ugandan National Agricultural Research Organization (NARO) in 1994. The second is a 1994 survey of 543 farmers in 5 districts in Uganda.

The NARO priority setting exercise was based on inputs by a group of 60 participants, consisting mostly of senior and mid-level personnel from NARO, Extension, and Makerere University. It used a weighted scoring method for ranking crops and constraints. This information was presented in the monograph "Agricultural Research Priorities and Programs" (1994) published and released by NARO with assistance from The International Service for National Agricultural Research (ISNAR). The 1994 Ugandan farmer survey was based on a multi-staged sampling procedure to select districts, counties, sub-counties, and villages as research sites. Farmers were asked to list their three most important crops and most important production constraints associated with each crop. Responses reflect a subjective perception of constraints based on unique farmer experiences with the production of each crop. This procedure is consistent with the participatory methodology which emphasizes farmer perceptions of production constraints.

The range of possible constraint responses by farmers was not known prior to the study. A wide array of constraint responses were recorded and later grouped across commodities using categories derived from the literature. General constraint categories derived from farmer responses were compared with NARO responses in Table I. In Tables 2-8 individual constraint responses by farmers for each crop are compared with NARO rankings across 7 crops including maize, millet, sorghum, banana (cooking), cassava, groundnuts, and coffee.

SELECTED FINDINGS and DISCUSSION: Whether NARO and farmers use the same general categories to describe constraints is examined in Table 1. There is general agreement between farmers and researchers on the number of weed, post-harvest and insect constraints. Farmers are somewhat more likely than NARO informants to perceive insects and less likely to perceive diseases as priority constraints. Considerable differences exist in the rankings of priorities by farmers and NARO informants for all other constraint categories. Farmers mentioned vertebrate pests as priority problems with two commodities whereas this was not mentioned by NARO informants. Farmers identified labor, physical conditions (drought and poor soils), and marketing as priority constraints across commodities. These were not mentioned by NARO personnel for any of the commodities. NARO informants specified the lack of improved agronomic management practices, generally labeled as rotational or cropping system constraints, and lack of improved varieties as important constraints. No farmers mentioned agronomic management as a constraint, although specification of labor constraints may be considered to be a surrogate for this constraint area. Lack of improved varieties was mentioned by farmers only for cassava and groundnuts.

Crop specific constraints ranked by NARO informants and by farmers are found in Tables 2-8. The assumption made by those who argue that local knowledge is different, thus requiring greater attention, is only partially demonstrated in this analysis. Farmers and NARO informants agree about some of the major constraints for each of the commodities reviewed here except for coffee and to a lesser extent groundnuts. NARO constraint rankings agreed with farmers regarding streak disease, stalk borer, and weeds on maize; striga on finger millet; striga and stem borer on sorghum; weevils and nematodes on bananas; and, cassava mosaic and mites on cassava. In general, these constraints are widespread where the crop is grown, have had clearly demonstrated and visible impacts on crop yields, and have received research, extension and even media attention over the years. These areas of greement appear to indicate high potential targets for future research investigation.

Some of the discrepancy in rankings may be explained by differences in terminology used by NARO and farmers. For example, with both sorghum and millet, NARO informants listed rotation and cropping system constraints, while farmers listed labor constraints particularly in regard to weeding. It has been established that rotating fields and extended fallow periods can provide some measure of control for weeds including striga (Oryokot, 1994). However, the capacity to implement both of these cultural practices in the area sampled has been severely curtailed by the loss of oxen due to political instability. As a result, the farming systems of this area have reverted to a greater dependence on the hand-hoe and human labor. This has served to greatly restrict crop acreage, reduce the opening of fallowed land, and increase the period of time in which crops are grown in the same fields.

Additionally, farmers are more likely to specify constraints they can observe, associate with yield reductions, and thus experience. For example, farmers prioritized highly visible vertebrate pests and visible insects and diseases such as grasshoppers, termites, black ants, smut, and rosette. These constraints were not mentioned by NARO informants. Many other diseases and small insects (thrips) tend to not be known or recognized as yield reducing agents by farmers. Again, this contextual knowledge displayed by farmers lends credence to the assertion that farmer knowledge of constraints is determined more by ease of observation than precise knowledge of agents that cause yield reduction (Bently, 1992).

NARO informants ranked varietal improvement and its constraint counterpart, lack of improved varieties, as important constraints for all commodities. That farmers more rarely identify lack of improved varieties as a major constraint may allude to their lack of availability, suitability, or cost. Thus, an over reliance on crop breeding programs to produce improved varieties for farmers who lack financial, infrastructural, or informational access to exogenous seed supplies at this juncture in Uganda's agricultural development might be called into question.

Several other issues emerge regarding plant breeding programs. The first is the acknowledged differences in selection criteria between farmers and scientists (Haugerud and Collinson, 1990). On-station plant breeding programs need to be exposed to farmer circumstances and priorities. An example is farmer recognition of drought as an important production constraint for four of the eight commodities. Many parts of Uganda are or have recently been subjected to periods of reduced rainfall. Yet drought as a priority constraint is not mentioned by researchers. Although it is recognized that the symptoms of drought stress may invite or mask some disease symptoms, incorporation of drought tolerance into breeding programs would seem to be in order particularly for the preponderance of rainfed farming systems in Uganda. Other examples are the well known use by farmers of multiple cultivars and intercropping, and labor constraints that prevent timely planting and weeding. This suggests that varietal selections need to be exposed to these conditions and the investigation of sub-optimal solutions (Carr, 1989). Although these notions may be referred to by NARO informants when they specify cropping system constraints, the use of this term appears to lack the degree of specificity necessary for ranking research priorities.

Finally, it is revealing to note that NARO informants did not specifically mention labor, marketing, physical (drought and poor soils), or vertebrate pests as constraints. Several caveats are offered to explain these discrepant findings. First, descriptions of the 60 persons who participated in the ranking exercise were not available. However, as stated in the monograph (NARO, 1994:51): "socioeconomic research is currently a relatively minor component of research activities in NARO". The absence of social scientists trained to provide emic descriptions of farmer production systems may be one explanation for these findings. Second, the proportion of farmers who participated in this exercise is not known. However, labor, marketing, and input availability are important constraints with farmers throughout much of Sub-Saharan Africa (Cleaver, 1993). That they did not figure prominently in the NARO rankings indicates that the proportion of farmers who participated was either low, or biased towards those with capital assets to off-set these constraints.

CONCLUSIONS: If agricultural research is to be responsive to farmers - demand driven - then using farmer perceptions of constraints needs to be integrated into researcher efforts to prioritize and address constraints. Since this is the stated mission of NARS, methods to more systematically collect and incorporate this knowledge should be developed. Several improvements are recognized and suggested by this current effort.

First and foremost, there must be enhanced collaboration and communication between farmers and scientists regarding priority problems and constraints. This can best be accomplished by including farmers in priority setting exercises at the time when they occur. However, financial and logistal constraints may impede farmer participation. Thus it may be more effective to conduct and then convey farmer research priorities to scientists prior to or during research prioritization exercises. This would compel scientists to adapt and adjust their constraint specifications to farmers' meaning systems and constraint categories. Reversing this process, by first having scientists determine priorities and then subjecting these to farmer evaluation risks reinforcing "elite misconceptions" (Howes and Chambers, 1980) and would require any additional procedural step to have farmer evaluations fed back to researchers.

Second, knowledge of farmer constraints alone is insufficient. Farmers and their attendant constraints need to be differentiated by social, economic and agroecological variables. Using the terminology of farming systems research, these variables would form a recommendation domain. However, the sociology of agricultural sciences is currently under-informed as to the interplay between antecedent factors that influence problem choice by farmers, and is under-equipped to utilize farmer knowledge to specify constraints (Busch and Lacy, 1983). Thus, the concept of farmer-definition of constraints needs to be linked to the agricultural and societal context to be a more meaningful tool for deriving demand for agricultural research.

Third, constraint identification by farmers and researchers can and do vary. They are subject to seasonal vicissitudes, disciplinary background, and experience with each crop. Farmers' perceptions of priority constraints may vary depending on when they are interviewed in the crop cycle. Thus, constraint identification and prioritization cannot be one-time efforts. They need to reflect continuous effort. However, the logistics and costs of a continuous effort to ascertain constraints argues against using multi-disciplinary teams of research scientists for this purpose. Perhaps, this is a role that local extension agents or representatives of farmer associations could play provided they received training and support for this activity. They could then contribute to priority setting exercises serving as knowledgeable representatives of local farmer interests. This would also strengthen the role of extensions' reverse feedback role and contribution to participatory agricultural research.

Ultimately, utilization of farmer perceptions of production constraints by research organizations will depend on their valuation of this knowledge. This may require a reorientation of the institutional reward structure to one that rewards technology adoption and rural development. In turn, institutionalized alterations in the reward structure may require organized social action on the part of farmers. It is only when small farmers organize to express their collective interests that their priorities will be heeded. This is termed farmer empowerment. In addition to technology development, it is an important by-product of participatory agricultural research.

REFERENCES:

-Ashby, J.A., (1990), "Small Farmers' Participation in the Design of Technologies." In Agroecology and Small Farm Development, (ed.) M. Altieri and S. Hecht. Boca Raton, Fla.: CRC Press.

-Bentley, J.W., (1992), "Alternatives to pesticides in Central America: applied studies of local knowledge." Culture and Agriculture, 44:10-13.

-Busch, L. and W. B. Lacy, (1983) Science, Agriculture and the Politics of Research, Westview Press, Boulder, Co.

-Carr, S.J., (1989), "Technology for Small-Scale Farmers in Sub-Saharan Africa". World Bank Technical Paper, No. 100. The World Bank, Washington, D.C.

-Chambers, R., (1990), "Farmer-First: A Practical Paradigm For the Third Agriculture." In Agroecology and Small Farm Development. (ed.) M. Altieri and S. Hecht. Boca Raton, Fla.: CRC Press.

-Chambers, R., A. Pacey, and L. Thrupp, (1989), Farmer First: Farmer Innovation and Agricultural Research. London: Intermediate Technology Publications.

-Chambers, R., and B. Ghildyal, (1985), "Agricultural Research for Resource Poor Farmers - The Farmer First and Last Model." Agricultural Administration, 20:1-30.

-Cleaver, K.M., (1993), "A Strategy to Develop Agriculture in Sub-Saharan Africa and a Focus for the World Bank." World Bank Technical Paper: Number 203, Washington, DC: World Bank.

-Ferguson, A.E.,(1992), "Differences Among Women Farmers:Implications for African Agricultural Research." In Proceedings of the Workshop on Social Science Research and the CRSPS. Carnahan Conference Center, University of Kentucky, Lexington, Kentucky.

-Haugerud, A. and M.P. Collinson, (1990), "Plants, Genes and People: Improving the Relevance of Plant Breeding in Africa." Experimental Agriculture. Vol. 26:341-362.

-Howes, Michael and R. Chambers (1990), "Indigenous Technical Knowledge: Analysis, Implications and Issues,"In Indigenous Knowledge Systems and Development. (ed.) D. Brokensha, D. W. Warren and O. Lerner. University Press of America, Inc.

-Kloppenburg, Jack, (1991), "Social Theory and the De/Reconstruction of Agricultural Science: Local Knowledge for an Alternative Agriculture." Rural Sociology, Winter 56(4): 519-548.

-National Agricultural Research Organization(NARO),(1995), "Agricultural Research Priorities and Programs." NARO: Monogram, Entebbe, Uganda.

-Oryokot, J.,(1994),"Striga:Strategies for Its Control-A Review." IN African Crop Science Conference Proceedings. Vol. 1, pp. 224-226.

-Pinstrup-Anderson,Per,(1982), Agricultural Research and Technology in Economic Development. Longman Group Ltd., New York.

-Roling, N.,(1990), "The Agricultural Research-Technology Transfer Interface: A Knowledge Systems Perspective."In Making the Link. D.Kaimowitz (ed.).Boulder, Colorado:Westview Press.

-Spencer, Dunstan, (1991), "Institutionalizing the Farming Systems Perspective in Multi-Commodity Research Institutes: The Role of Systems- Based Research Groups." Experimental Agriculture, Vol. 27, pp. 1-9. Great Britain.

-Venkatesan, V. and J. Kampen, (1998), "Evolution of Agricultural Services in Sub-Saharan Africa: Trends and Prospect," Discussion Paper/No. 390, The World Bank, Washington, D.C.

-Zaltman, G.,(1979),"Knowledge Utilization as Planned Social Change". Knowledge, Creation, Diffusion, Utilization, Vol. 1, September, pp. 82-105. Beverly Hills: Sage Publications.

Table 1: General Constraint Categories Across Commodities

General Constraint Categories	Biological				Physical			Marketing	Technology		
Crops	Insects	Diseases	Weeds	Vertebrate Pests	Physical	Agronomic Mgt.	Lack of Labor	Marketing	Improved Varieties	Storage	Lack Pesticides
Maize	1(2)	3(1)	1(0)	0(1)	0(1)	2(0)	0(2)	0(1)	1 (0)	1(1)	--
Millet	0(2)	3(0)	1(1)	--	0(1)	1(0)	0(2)	--	1(0)	—	--
Sorghum	1(1)	0(1)	1(1)	--	--	1(0)	0(1)	--	1(0)	1(1)	--
Banana	2(2)	2(1)	--	--	0(2)	4(0)	0(1)	0(1)	1(0)	—	--
Cassava	1(1)	1(1)	--	0(1)	0(1)	1(0)	0(1)	--	3(1)	—	--
Groundnut	1(0)	1(1)	--	--	--	--	0(1)	--	1(1)	—	0(1)
R. Coffee	1(1)	2(0)	0(1)	--	0(1)	--	0(1)	0(1)	1(0)	—	--
Totals	7(9)	12(5)	3(3)	0(2)	0(6)	9(0)	0(9)	0(3)	9(2)	2(2)	0(1)

Researcher Constraints N=42
Farmer Constraints ( ) N=42

Specific Crop Constraints Identified by: NARO & Farmer Informants

Table 2: Maize

NARO Informants	Farmer Informants
1. Maize Streak Virus	1. Stalk Borer
2. Lack Improved Varieties	2. Vertebrate Pests
3. Inappropriate Spacing Plants	3. Marketing (Low Prices)
4. Inadequate Intercropping	4. Labor for weeding
5. Northern Leaf Blight	5. Maize streak virus
6. Weeds [Principally Striga]	6. Post harvest storage
7. Weevils	7. Drought
8. Stalk Borer	8. Termites
9. Downy Mildew	9. Labor for harvesting

Table 3: Finger millet

1. Striga	1. Labor for Weeding
2. Blast	2. Labor for Harvesting
3. Lack of Improved Varieties	3. Grasshoppers
4. Cylindrosporium [Finger Mil.]	4. Weeds (Striga)
5. Tar Leaf Spot [Finger Mil.	5. Drought
6. Rotation/Cropping Systems	6. Army Worms

Table 4: Sorghum

1. Striga	1. Stem Borer
2. Stem Borer	2. Striga
3. Lack of Improved Varieties	3. Smut
4. Grain Mold	4. Labor for Weeding
5. Rotation/Cropping System	5. Post-Harvest Storage

Table 5: Banana

1. Weevils	1. Weevils
2. Nematodes	2. Nematodes
3. Sigatoka	3. Drought
4. Poor Stand (Plant Population)	4. Marketing Problems
5. Fusarium Wilt	5. Labor Requirements
6. Lack of Genetic Diversity	6. Poor Soils
7. Improper Tillage Practices	7. Sigatoka
8. Rotation/Cropping Systems	
9. Lack of Pruning/Desuckering	

Table 6: Cassava

1. Poor Seed Quality	1. African Cassava mosaic
2. African Cassava Mosaic	2. Mites
3. Lack of Improved Varieties	3. Vertebrate Pests [Mole Rat]
4. Green Spider Mite	4. Lack of labor
5. Rotation/Cropping System	5. Poor Soils
6. Lack of Genetic Diversity	6. Lack of Improved Varieties

Table 7: Groundnuts

1. Lack of Improved Varieties	1. Rossette
2. Cercospora Leaf-Spots	2. Lack of Pesticides
3. Thrips	3. Labor - Weeding/harvesting
	4. Lack of Improved Seeds

Table 8: Robusta coffee

1. Coffee Leaf Rust	1. Biting Ants
2. Red Blister Disease	2. Weeds [Couch Grass]
3. Coffee Berry Borers	3. Labor - Weeding/harvesting
4. Lack of Improved Varieties	4. Marketing(Low Prices/Delayed Payment)
	5. Drought

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Facilitating Change in Senegalese Rice Production: Learning Serer Women Farmers' Decision Making

Submitted by

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Introduction

One of the challenges we in the field of extension education face moving into the 21st century is the search to make development sustainable. There are too many examples of development efforts which collapsed when funding ceased or international consultants returned home. The key to sustainability lies within the people and communities being acted upon. (See Cernea, 1985; Pretty, 1998; Swanson, 1984).

Extension education has evolved from being a process of dissemination of information, to a process of actively advocating for change, to facilitating the change process. (See Boone, 1989; McDermott, 1987; Rasmussen, 1989; Rogers, 1983; Shaner, Philipp, and Schmehl, 1981). The skills required to accomplish these different roles are not the same. The extent to which one has intimate knowledge of the people and communities within which one works also will vary. To be a facilitator of the change process requires a deeper knowledge of the internal dynamics of a community and the factors impacting people's decision making.

The role of facilitator or advisor implies active participation on the part of the extension educator to learn from the farmer. The challenges in the day-to-day decision making by the farmer must be known so that changes or ideas can be presented to the farmer which address their situation. A standardized recommendation may be irrelevant but in facilitating change a standard recommendation can be adapted in collaboration with farmers to increase the probability of sustainable change.

Purpose

The purpose of this case study is to describe an extension education program in which the extension educator's role was as a facilitator in the change process. The specific objective uses Rogers' innovation-decision process as the conceptual framework to describe the process revealing the factors which guide, direct, or influence a farmer's innovation-decision process in relation to a rice extension program. There are four parts to this paper. To begin, this paper presents the interaction during the implementation of a rice extension education program in Senegal. Secondly, the factors unveiled which impact the farmers innovation decision process are described. This is followed by a description of the role of the facilitator in the process. Finally, a reflection on the educational importance of this case study is presented.

Method

This study used an interpretive research paradigm. The researcher was participant observer during three growing seasons serving as the extension educator in two communities. Since the subject matter studied included human interaction and experience, as well as process variables, ethnographic research techniques were used to conduct the study.

Throughout the growing season, weekly visits were made to the rice fields. The author, as a Peace Corps Volunteer, lived in the villages year-round allowing the process for gathering information to be iterative. Specific research methods used by the author were personal interviews with farmers, network analysis, time allocation studies, group interviews for pre- and post-season planning and evaluation, and observation.

Rice Extension Program

The rice extension program was a joint effort between Peace Corps/Senegal and Winrock International Institute for Agricultural Development funded by the United States Agency for International Development. The goal of this project was to provide poor farmers with improved crop varieties, better agronomic practices, and simple methods of production, storage, and distribution of seeds (Bragantini & Schillinger, 1992). Winrock provided technical assistance and the initial supply of improved rice seed. For its part, Peace Corps/Senegal provided trained individuals who served as the extension educator at the village level. The objectives of the program were: 1) to use improved seed varieties and improved seed production and handling techniques in crop production systems; and 2) to increase production of secondary crops (rice, manioc, and sweet potatoes, and others) in appropriate crop rotation or inter-cropping schemes. The end to meeting these objectives was to demonstrate through on-farm comparison plots, the new rice variety and rice cultivation practices with small groups of farmers in the villages where Peace Corps Volunteers were living and/or working.

The Peace Corps Volunteers followed an established set of activities as part of the extension program. In year one, the volunteer conducted a baseline data survey with five pre-selected farmers. The baseline data survey served two purposes: to become familiar with the cultivation of rice in that community and to collect data on the varieties of rice grown in the communities participating in the survey. This information allowed the technical consultant and volunteer to learn the characteristics of rice grown and the ecology in that locale so as to select a rice variety to introduce and to have a basis of comparison between the new rice variety's performance and the local varieties. During the first year, data were collected only on the traditional variety. With this information, a decision was made on which of four new rice varieties to introduce into the cropping system for that locale.

The communities in this study direct-seeded their rice. The choice of a new rice variety for this upland, rain-fed production system was DJ12-519 which was developed in Senegal. For direct-seeded rice, the emphasis of the extension program was seeding on-line with an animal-drawn planter. For women who could not plant with an animal-drawn planter, a metal rake was designed as an alternate method to assist with planting the rice on-line. The rake could be dragged across the field marking furrows into which the rice seed was sown. In addition, a weeding schedule was promoted. If a farmer weeded her field twice, the weeding should be done

15- and 40-days post-emergence. If the farmer weeded only once, then it should be 25-days post-emergence.

In year two, the on-farm comparison plots were established. The rice farmers who participated in the baseline data survey were given seed of the rice variety DJ12-519. The volunteer assisted the farmer to establish side-by-side plots of the new rice and a traditional variety using one kilogram of seed. Throughout the growing season, the volunteer was responsible for collecting data on both plots using the baseline data survey form used the previous year. During the second year, a larger number farmers were recruited to participate in the baseline data survey with the expectation that each of them would receive a kilogram of the new rice variety the following year.

Results

Using Rogers' 5-step innovation decision process as the framework for monitoring the change as it occurred within the communities, this study began to reveal the factors impacting the women's choices in the village rice production system. This framework permitted the extension educator to learn more about these factors and begin facilitating the decisions made across three growing seasons with respect to the rice production activities in the communities.

Both communities in this study were predominantly Serer. The Serer are agriculturalists combining livestock with crops and permanent fields with bush fallow rotations in a carefully balanced, highly productive system (United States Department of the Army, 1974). The communities grew peanuts, millet, sorghum, corn, and rice. Families shared responsibility for the production of peanuts, millet, sorghum, and corn. Rice was a crop which the women worked. The rice fields averaged 806 m² in size but contained two or three varieties of rice. Women made the decision as to the variety of rice placement based on the soil characteristics (i.e., too hard to work before the first rain) or water level (i.e., standing water during the growing season). The rice plots were transformed into well-water irrigated, market gardens of tomatoes, peppers, onions, eggplant, and okra after the rice was harvested.

The exchange of knowledge was facilitated by the organizational structure of the village. Each of the communities had a women's group with elected officers. The volunteer's entree into the village was made through the women's group selecting five individuals to be the first participants in the program. The officers were generally direct relatives or related by marriage to the village chiefs of the communities. Women in the communities shared rice seed and each variety carried the name of the woman who passed the seed onto others. The exception to this was the variety introduced during a Chinese project 20 years earlier which was referred to just as *Chinois*. When a farmer was interested in a different variety of rice with a particular characteristic--such as a very short-cycle-- the women shared the knowledge. Most of the knowledge in the current extension education program was not new. The Chinese had demonstrated seeding on-line and introduced a dwarf, short-cycle, high yielding rice variety previously. SODEVA, a program of the Government of Senegal, re-iterated the use of animal-drawn planters for rice ten years earlier. This program reinforced these ideas as factors in the persuasion step to follow. Working as an extension educator in the communities, the volunteer became a new source of information for the new rice variety called *Djibilor* or DJ12-519 and was also expected to answer broader questions on other varieties of rice.

At the end of the first growing season, armed with the information from the baseline data survey and several months of observations, the first group meeting was held with the women.

Previously we worked individually in the rice fields as measurements and observations were taken. But a group meeting was held to discuss the introduction of the new rice variety and their concerns with the program. The first concern raised by the women was the change in the climate of the area. The rainfall pattern was changing. They recognized the decrease in the amount of rainfall as well as the timing of the rains. The ten year average of rainfall was 674 mm from 1982 to 1992 falling on an average of 44 days during the rainy season. The need was raised to have a rice variety better adapted to this change in rainfall.

The farmers who agreed to participate in the program had similar issues affecting their decision making during the persuasion step. With less rainfall, they wanted access to a rice variety that better matched the change in rainfall pattern. A variety which added to their already multi-variety fields was seen as advantageous. A major concern for the women was the vegetative growth pattern of the rice. The women had work responsibilities with the peanuts and millet. Collectively, the farmers voiced two concerns about whether or not to try the new rice variety. An early variety may flower before they had time to weed the fields resulting in them damaging the grain as it formed when they did move to weed the fields. The second, again an issue of timing, dealt with the need to keep birds away from the rice. The women in one community had their rice fields in a distant location. If they were still busy with the work in the peanuts and millet, the children could not walk that far to spend the day in the fields. In this case, the community selected fields closer to the village for the trial so that the children could go to the fields and keep the birds away.

The persuasion step showed the contrast between the two communities. The women in the village where the volunteer lived were already sowing their rice fields with oxen-drawn planters. This system had been working for the past five years at least. The arrangement was that all fields were prepared in April. The men sowed the millet in May prior to the rains.

The women would then plant the rice, also prior to the rains. This left the animals and planters available for the men to plant peanuts when the first rains began. The second community had yet to establish this pattern. The men waited longer before sowing the millet. The women needed to establish the window of opportunity to use the animals and planters for sowing the rice prior to the start of the rains.

The decision step was difficult to document in this case. Although the factors that affected the persuasion step were discussed with the women, the artificial structure of only allowing five farmers per year to establish comparison plots severely limited participation in the program. It was during the second year that it became apparent, using network analysis, that one of three clans in the community did not have a single participating farmer. The fact that the volunteer was placed within the compound of the village chief and that all the farmers in the program were blood relatives or in-laws reinforced the power structure of the community.

The implementation step was straightforward once the decision to participate in the program was made. The 10 women involved in both communities for the first year of the program made the decision when to plant the rice. Each farmer also chose the traditional rice variety she wanted used in the comparison plot. A unique aspect of these communities was the fact that Serers are matriarchal. Whereas an assumption was made that the husband would participate in planting the rice, it was actually a son or grandson that eventually escorted his mother or grandmother to the field to sow the rice. Some sons also had a role in the harvest. In the few cases where the field was harvested on the same day using a sickle, the son or grandson harvested the rice. The other way of harvesting rice was done by the women themselves; in this case, a farmer moved across the field harvesting the rice one panicle at a time requiring several days to complete the task.

The confirmation step of the innovation decision process was impacted by five factors. The side-by-side comparison plots permitted the women to make their own observations of the differences between the DJ12-519 and their traditional variety. The weekly visits to the field by the volunteer allowed for discussions and observations to be made with the women throughout the growing season. For example, observations of a fungal infestation in a traditional variety which did not affect the DJ12-519 is a case in point. Another time the discussion centered on the lodging of the rice in one half of the field but not in the other half sown with DJ12-519. It provided an opportunity for the women to pose questions during the season instead of after the fact during a post-harvest meeting. The acceptance of the new variety is demonstrated by the average increase of 234% in surface area planted in DJ12-519 during the third year of the study; individual farmers enlarged their DJ12-519 areas by 180 to 306%.

The harvests in the first year of the trials had the biggest impact on the confirmation step of the farmers. In the first year of the trials, yields ranged from 25 to 144 kilograms of rice harvested for one kilogram of seed planted. The change in variety and cultivation practices resulted in increased levels of production in both communities as shown in the table below.

Standardized Average Yield of Rice (kg/ha)

Traditional rice variety Broadcast seeded	1,870
Traditional rice variety seeded on-line	2,609
DJ12-519 variety seeded on-line	3,402

Seeding on-line using a traditional rice variety resulted in a 44% increase in average yield. Using the DJ12-519 variety, seeded on-line, resulted in an 88% increase in yield over traditional varieties, broadcast seeded; and a 30% increase in yield over traditional varieties seeded on-line. The yield was a major factor on the decision-making but not the only factor contributing to confirmation of DJ12-519 rice production.

A devaluation of the currency in 1994 and a change in monetary policy impacted the household cash resources and therefore a need for higher rice production. Rice has become a staple in the diets of the Serer communities. The ability to have rice at the midday meal to replace millet is indicative of wealth. In 1992, a 50-kilogram sack of rice, smuggled across the border from The Gambia to the south cost 5,500 francs CFA. After the changes in 1994, that same 50-kilogram sack of rice could only be purchased from a city to the north and was priced at 9,250 francs CFA. The impact that this had on households with limited cash sources made it imperative for the women to increase rice production as a way of decreasing the purchases of imported rice and using up scarce cash required for other household needs.

The farmers after the first season gained first hand knowledge of DJ12-519. They saw it as a plausible alternative for their rice fields given that it had a shorter growth cycle and could provide rice for a household earlier in the season. The introduction of DJ12-519 did not become a replacement for the traditional rice. The most flavorful rices mentioned by the women were the late maturing varieties that required more water. Although DJ12-519 had the advantage of producing more, the desire to maintain production of at least a small area of the better flavored varieties of rice continued the practice of having a field of a mixture of rice varieties.

Facilitating change

This extension education program was designed to assist the women farmers with their rice production. The tendency was to think all farmers needed to switch to DJ12-519 rice given its yield potential. The program advocated reallocation of labor from weeding to planting on-line and for the men to take a larger role in rice production. As the extension educator, a personal bias was to keep the decision-making with the women. The role to assume then would be to feed farmers information to allow them to make the best decisions. In addition, the volunteer was a feedback loop to individuals working with rice on a national level to access other information for the women.

Over three growing seasons, I gradually began to appreciate the manner through which the women could be helped. The new rice variety could produce more and sooner in the season. It would relieve a family's need to dispense scarce cash for purchased rice. DJ12-519 would never replace the traditional rice varieties which were better tasting and harvested later--and therefore stretched out the period of time before a family needed to purchase rice. The DJ12-519, being more drought tolerant, provided a greater cushion during times of sporadic rainfall. It added flexibility to the complex planting patterns women practiced in their rice plots. Also an earlier transition from rice to market gardens would permit women to take advantage of a higher price received for their produce before the markets became flooded with tomatoes, onion, peppers, eggplant, and okra and a simultaneous fall in prices.

The economic changes the communities experienced had a major impact on the innovation decision process. As Schnieder (1986) suggests Africans are economizers. The changes in monetary policies increased the need for local rice production due to a doubling in the price of rice but with no increase in cash income for the farmers to purchase rice. Therefore, the people's preference for rice over millet impels them to modify their current production practices to increase yields. Given the scarce resources available to the women, the development strategy needed to keep the cost to the farmer as low as possible. The advance of one kilogram of seed was practical for the women with the only expectation being they should return one kilogram of seed after their first harvest which was passed on to other women in the community.

The rice extension education program had been planned for the national level, but a key to sustainable change was found within the communities as women voiced their concerns regarding the recommended changes revealing the innovation-decision process of the women. Their concern began with the growing cycle of the rice. A short-cycled variety interfered with their work in millet and peanut fields; a long-cycled rice delayed harvest and the transition of their rice fields into vegetable gardens. The availability of the children to sit in the rice field to scare away birds was also a factor in the decision to plant the new rice variety.

The value of seeding rice on-line was recognized by the women. Expending more labor at planting time would reduce the labor required later to weed a broadcast-seeded field. In both communities, men controlled the use of the oxen and planters. The villages differed in that men in only one village provided the necessary window of opportunity for the women to use the oxen and planter in the rice fields prior to the rains. Serers are matriarchal so in the community that did seed on-line, it was not the husbands who helped their wives with planting rice, the women turned to a son or grandson to accomplish the task.

The new rice variety played a role in management of household resources. DJ12-519 was a 100-day rice variety and a high producer. It complemented the other rice varieties used in the communities selected for length of growing season, productivity, and flavor. In addition, with a devaluation of the currency, it became imperative at the household-level to produce more rice to decrease purchases of imported rice which used scarce cash required for other needs.

Conclusions

To be effective facilitators of change, extension educators need to acquire a new set of tools. Learning the factors that impact the innovation decision process of the Serer farmers could not be accomplished through passive observations. The process of facilitating change begins with the entry of an extension educator into a community. A level of interaction with the community must be reached beyond the meetings where an educational program is conducted. To do this, a new set of tools permitting extension educators to obtain an in-depth understanding about how people in different cultures and environments make decisions is required. Using the tools available through the social sciences such as network analysis, time allocation studies, in-depth interviews and not just survey questionnaires will assist the extension educators in learning about the communities they serve. Intimate interaction with farmers, such as occurred in this case study, discloses how change impacts the work of farmers and internal dynamics of community systems. Monitoring this change and participating in the discussions to address the concerns within the community is one avenue to ensure the sustainability through facilitating the farmers' innovation decision process.

Educational Importance

The importance of this case study is two-fold. First it points to the need to develop within the next generation of extension educators new competencies necessary to be facilitators of change. The skills required of this cohort are methods to enter the field, interact with farmers, and learn the factors impacting the innovation decision process. This holds true for expatriates in the field as well as for university-educated nationals born and raised in the capital city but now working at the village level. It is imperative that extension educators understand the thought process of the farmers in order to facilitate change. Teaching the skills necessary to follow the process, in addition to the methods of introducing change, should be an integral part of the education programs for extension educators. Secondly, this case study reflects that to facilitate change, understanding the thought process is the first step to a) facilitating the thinking process of a farmer on her/his terms and b) assuming the role of advisor to the farmer, who is the key to sustainable development. An advisor cannot be of service when the factors impacting a farmer's decisions are unknown. How to address the concerns facing the farmer remains problematic if the extension educator does not know what knowledge needs to be brought into the decision making process. The knowledge gained by being an advisor, with an intimate knowledge of the innovation decision process of farmers, will only strengthen the role extension educators serve as feedback loops into the research process on behalf of and by the farmers.

References

Boone, E. J. (1989). Philosophical foundations of extension. In D. J. Blackburn (Ed.), Foundations and changing practices in extension (pp. 1-9). Guelph, Ontario, Canada: University of Guelph.

Bragantini, C., & Schillinger, W. F. (1992). Final evaluation of the on-farm seed project, Senegal and The Gambia. Winrock International Institute for Agricultural Development. Joint PVO/University Center for Rural Development. (Matching Grant OTR-0290-A-007203-00, Office of Private and Voluntary Cooperation, U.S.A.I.D.). Unpublished manuscript.

Cernea, M. M. (1985). Sociological knowledge for development projects. In M. M. Cernea (Ed.), Putting people first (pp. 3-19). New York: Oxford University Press.

McDermott, J. K. (1987). Making extension effective: The role of extension/research linkages. In W. M. Rivera & S. G. Schram (Eds.), Agricultural extension worldwide (pp. 89-99). New York: Croom Helm.

Pretty, J. N. (1998). Supportive policies and practice for scaling up sustainable agriculture. In N. G. Röling and M. A. E. Wagemakers (Eds.), Facilitating sustainable agriculture: Participatory learning and adaptive management in times of environmental uncertainty (pp. 23-45). Cambridge, U.K.: Cambridge University Press.

Rasmussen, W. D. (1989). Taking the university to the people: Seventy-five years of cooperative extension. Ames, Iowa: Iowa State University Press.

Rogers, E. M. (1983). Diffusion of innovations (3rd ed.). New York: The Free Press.

Shaner, W. W., Philipp, P. F., & Schmehl, W. R. (1981). Farming systems research and development: Guidelines for developing countries. Boulder, Colorado: Westview Press.

Schneider, H. (1986). Traditional African Economies. In P. M. Martin & P. O'Meara (Eds.), Africa, 2nd ed., (pp. 181-198). Bloomington, IN: Indiana University Press.

Swanson, B. E. & Claar, J. B. (1984). The history and development of agricultural extension. In B. E. Swanson (Ed.), Agricultural extension: A reference manual, 2nd ed. (pp. 1-19). Rome: Food and Agricultural Organization of the United Nations.

United States Department of the Army. (1974). Area Handbook for Senegal. (Foreign Areas Studies, American University.) Washington, DC.: Author

A Study of the Incentives and Barriers to the Development of New and Alternative Enterprises on farms in two States of the United States

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Abstract

The adjustments in agricultural supports in the United States and in Europe have increased interest in farm diversification especially in Ireland. The potential reduction in farm household income arising from reduced profitably in many mainstream agricultural enterprises will require farmers to examine alternative enterprises to restore the income deficit. A postal survey was carried out on a sample of farms in Pennsylvania and Minnesota to determine: (1) the extent and types of new and alternative enterprises, (2) the personal and other farm characteristics of farmers who have commenced these enterprises and (3) the incentives and barriers encountered by respondents in establishing and developing these alternatives. The survey resulted in 219 usable questionnaires and 455 enterprises were identified. Horticulture and agriculture were the two most important areas for alternative enterprises followed by

tourism, agri-sales/business, contracting, industrial and personal services. Marketing was identified as an important area within horticulture and agriculture. The incentives for commencing alternative enterprises were to increase income, the presence of market opportunities and the under-use of existing physical facilities. On 57% of farms, new and/or alternative enterprises contributed in excess of 25% of the total earned income on those farms. Sixty-five per cent of respondents expected the proportion of income arising from alternative enterprises to increase over the following 3 years. Barriers to setting up the enterprises were market uncertainty and the shortage of loan capital. Lack of technical, business and specialist advice were also important barriers. Thirty four per cent of respondents considered the establishment of additional new or alternative enterprises but did not proceed. The main reasons identified for not proceeding were insufficient time and shortage of funds.

Introduction

The reform of the Common Agricultural Policy (CAP) in the European Union countries in 1992 meant that price supports for the main agricultural enterprises are gradually being reduced. Farmers who relied solely on profit derived from these enterprises now require additional income from other sources to maintain household income. As part of the CAP reform, European Union support was forthcoming for a limited and defined number of non-traditional or alternative enterprises. This was a new concept within Irish Agriculture. Experience to date in Ireland shows that a limited number of farmers have established alternative enterprises and efforts at promoting them have achieved little success. Little innovation was also evident in the range of alternative enterprises that were adopted. There are serious low income and viability problems on many Irish farms (Commins,1996; Phelan and Markey, 1996; Phelan, 1997; Teagasc 1988-1997). If a significant number of those farms are to be retained, they will need to diversify or obtain off-farm employment. In many rural areas in Ireland there has been little focus on the establishment of rural industry. In those areas farmers have little opportunity to gain off-farm employment and the ability to diversify is critical to their survival.

In the United States of America, however, there were a range of sources of information available indicating considerable success in establishing new and alternative enterprises (e.g. ADAPT 100, 1986; Alternative Agricultural Opportunities, 1991; Schuck et al. 1988; Bryant, 1989). This information also suggested that there were a far greater range of new and alternative enterprises being established in the USA than in Ireland.

The purpose of this research was to examine (1) the extent and types of new and alternative enterprises which have been set up on farms in the USA, (2) the personal and other farm characteristics of farmers who have commenced these enterprises and (3) the incentives and barriers encountered by respondents in establishing and developing these alternatives (4) to assess the implications of the research for the development of new and alternative enterprises on Irish farms.

Methodology

The study was developed through co-operation between the Department of Agribusiness, Extension and Rural Development, National University of Ireland, Dublin, Ireland, the Department of Agricultural Economics and Rural Sociology, Penn State University and Penn State Co-operative Extension Service, and the Department of Applied Economics, University of Minnesota and the Minnesota Extension Service.

New and alternative enterprises refer to either a new initiative taken by farmers in developing the farm business in which they were not previously engaged or to non-traditional agricultural production-based enterprises, which were not extensively carried out in the area.

A postal survey instrument was designed and agreed with the Offices for the Protection of Human Subjects in Pennsylvania (PA) and Minnesota (MN) and pilot tested in both States. Three hundred farmers in each State were identified who were known to be engaged in new and/or alternative enterprises. The survey was carried out in 9 South Eastern counties of PA and 19 counties in the Southeast of MN. The above process resulted in 219 questionnaires, 49.3% (108) from PA and 50.7% (111) from MN which were deemed suitable for analysis.

Results

Personal, Situational and Farm Characteristics

Survey respondents were predominantly male (85.5%), married (91.5%) and aged 31-59 years (77.3%). Sixty per cent reported having at least one child while 39% had other dependants who were either fully or partially supported from the farm. Terminal education levels of respondents were 41 per cent College and 47 per cent secondary (high school) level, while advanced degree qualifications were obtained by 7 per cent. Farm sizes varied from 2-2000 acres and the mean area farmed was 369 acres. There was a good distribution of farm sizes within this range. Fifty-five per cent of respondents rented land. Corn was the most important farm enterprise on 24 per cent of farms surveyed. This was followed by dairy on 15 per cent and soybean on 12 per cent. There were also a considerable number of farms with, beef, alfalfa hay, fruit, vegetables and mushrooms while some farmers had a mix two or more main enterprises.

Employment of family labour on a full time and part time basis was present on 66 per cent and 43 per cent of farms respectively. Full-time hired labour was used by 27 per cent while 48 per cent employed part-time hired workers. On 17 per cent of farms there were 6 or more hired part-time workers. Off farm employment was reported by 23 per cent of respondents and by 42 per cent of respondents' spouses. Almost 61% of respondents had previous employment experience with 29 per cent holding one position and 32 per cent two or more positions. Most of the employment experience was in non-agricultural areas (78%) while 22 per cent was in agriculture, horticulture, forestry and related areas. Employment duration was 1-10 years for over 51 per cent of respondents and in excess of this for the remainder.

Types of enterprises

There were 455 enterprises identified and classified into 10 groups. The groups identified are presented and ranked in Table 1. Horticulture and Agriculture based enterprises were the largest categories of new and alternative enterprises on the farms accounting for over 63 per cent of the enterprises reported. Tourism end entertainment enterprises accounted for 9 per cent, agri-sales and business enterprises 8 per cent and contracting 6 percent. These were the major categories in which new or alternative enterprises were established.

Table 1: Categories and ranking of new and alternative enterprises

Categories of Enterprises	Frequency, (%)	Rank
Horticulture	170 (37.4)	1
Agriculture	117 (25.7)	2
Tourism and Entertainment	42 (9.2)	3
Agri-sales and business	37 (8.1)	4
Contracting	28 (6.1)	5
Industrial enterprises	16 (3.5)	6
Personal Services	13 (2.9)	7
Miscellaneous	13 (2.9)	8
Domestic services	10 (2.2)	9
Organic	9 (2.0)	10
Total	455 (100)	

Additional information on the major categories is presented in Table 2. Horticulture was the most important category. Sub-classification of this category showed that 79 enterprises were designated as vegetable and fruit production systems, 14 involved production and processing while 77 were mainly marketing and selling related.

In agriculture there were two sub-categories termed Agriculture enterprises and Special stock enterprises. In the former category a number of traditional enterprises were main farm enterprises but were new to the particular respondents' farms e.g. cattle and pigs. Agricultural enterprises also included on farm processing of farm production, marketing of beef products and the selling of hay and grain directly off the farm.

The special stock sub-category included such enterprises as sheep, goats, elk, deer, ratites, small horses and an assortment of other small animal enterprises.

Commencement of new and alternatives enterprises

Respondents were asked to select from a list of 11 alternative possibilities their priority reasons for starting new and alternative enterprises. The results showed (Table 3) that increasing income, market opportunities, available physical resources and developing a new interest were the 4 most important reasons for starting the new or alternative enterprise. Other reasons were reduced profits from existing enterprises, available financial resources and surplus family labour. The differences between PA

Table 2: Details of Enterprise in the major Horticulture and Agriculture categories

Type of enterprise	Frequency	Sub-type of enterprise	Summary description
Horticulture	79	Horticultural production	Vegetables (57) ; Fruit (20)

	14	Horticultural production/ Processing;	Fruit processing (10); Composting (4)
	77	Horticultural marketing	Farmers market (8); PYO (17); Roadside/tailgate (6); Floriculture (13); Nursery/landscaping (16) Timber/Christmas trees (7) Others (10)
Agriculture	56	Agricultural Enterprises	Cattle, pigs, grain etc (24) Marketing: direct sales of the farm (20), On-farm processing(6); Others (6)
	61	Special stock	Sheep and goats (9); Bison, elk and deer (12); Ratites (3); Poultry (19);Small horses, canines, other animals (12), Others (6)

and MN were within 2 per cent for all reasons except for market opportunities which was more frequently mentioned in PA. Reduction of profits from existing enterprises received a higher number of mentions from MN respondents.

Respondents were also asked for other reasons for adopting alternative enterprises and 216 mentions were recorded. Business and market opportunities accounted for over 29 per cent of these mentions, personal satisfaction 15 per cent, and business strategy 11 per cent. Family, available resources and social and community factors were also mentioned. Market opportunities were mentioned as being more important in PA (21.7%) compared to MN (17.5%) for establishing new and/or alternative enterprises, however, differences between the States for all of the other reasons mentioned were small.

For thirty per cent of respondents, income from their new or alternative enterprises contributed greater than 50% of the total farm income. In 27 per cent of cases they contributed between 25 and 50 per cent and in the remaining 41 per cent the contribution was less than 25 per cent of the total income earned from the farm.

Forty eight per cent of respondents spent in excess of 75 per cent of their time (own and partner's) managing and operating the farm while 17 per cent spent 25-50 per cent and 35 per cent of respondents spent less than 50 per cent of their time. Thirty per cent of respondents allocated in excess of 50 per cent (own and partner's) time to managing the new and alternative enterprises. Thirty-one and 37 per cent allocated 25-50 and less than 25 per cent of their time respectively to the operation of alternative enterprises.

Table 3: Reasons reported for starting new and alternative enterprises and by State

Reasons for starting a new/alternative enterprise	Frequency	% of total	PA %	MN %
To increase income	371	27.5	27.6	27.8
Reduced profit from existing enterprises	78	5.8	4.8	7.1

Available physical resources[1]	210	15.6	15.3	16.2
Surplus family labour	64	4.7	5.4	4.1
Market opportunities	266	19.7	21.7	17.5
Available financial resources	71	5.3	5.3	5.2
Enterprise transfer to other family member	25	1.9	1.9	1.9
Desire to abandon existing enterprise	43	3.2	2.9	3.5
4-H project	10	0.7	0.1	1.5
Excessive farm debt[2]	13	0.9	1.7	0.0
Wish to develop a new interest	199	14.7	13.3	15.2
Total	1350	100.0	100.0	100.0

[1] available physical resources are buildings, facilities etc.

[2] reason not asked in MN

Barriers encountered in establishing new and alternative enterprises

The most difficult problems experienced by respondents in setting up alternative enterprises were sought in the survey. The results showed that the most difficult problem mentioned was market uncertainty followed by shortage of loan capital (Table 4). Lack of technical advice, and business and specialised advice were ranked 3 and 4 respectively. Inadequate tax breaks and insufficient training were ranked 5 and 6 respectively. When the States were compared market uncertainty and shortage of loan capital were relatively more important factors in MN while insufficient training was more significant in PA. There was also a very diverse range of "Other" problems listed that were more significant in PA compared to MN. When respondents were asked to rank the difficulties they encountered (on a scale of 1-5 where 1= most difficult), uncertainty in the market was ranked as the most difficult problem followed by lack of technical advice and shortage of loan capital.

Seventy-five respondents identified enterprises that they considered developing but were unable to do so. When asked for the reason preventing the development of these enterprises, insufficient time (37.4%) and lack of funds (19.2%) were the most important reasons. Forty-eight respondents (22%) reported that they abandoned alternative enterprises and 66 mentions were given as reasons for abandonment. The most important of these were lack of market (19.7%), insufficient profit (16.7%) and insufficient time (15.2%).

Table 4: Number of mentions of the most difficult problems or areas of deficiency in establishing new and alternative enterprises.

Problems / Deficiencies	Frequency	Rank	PA, %	MN, %
Uncertainty in the market	66	1	26.1	33.0
Shortage of loan capital	36	2	11.3	21.1
Lack of technical advice	25	3	11.3	11.0
Lack of business advice and specialised advice[1]	21	4	9.6	9.2

Inadequate tax breaks	19	5	7.8	9.1
Insufficient training	16	6	10.4	3.7
Other	41		23.5	12.9
Total	224		100.0	100.0

[1] legal, accounting etc.

Discussion

A wide range of new and alternative enterprises was identified in the USA study of which horticulture was the most important. In Ireland circa 30 per cent of horticultural produce consumed is imported (An Bord Glas, 1997). This must present a major opportunity for farmers particularly those who are located close to large centres of population. The problem in Ireland is again one of marketing, a problem that has not been addressed by producers in Ireland but has been addressed by many US farmers in this study. This is an area requiring further research with a particular focus on learning from market activities in the USA, particularly those that could be applied in Ireland. The difference in education levels between the US farmers' studied and Irish farmers may be a factor in explaining this difference. Market uncertainty, however, was also identified as the most important barrier facing respondents in the US study. This is similar to the Irish situation where farmers' view their role primarily as producers of food and pay little attention to marketing. Shortage of loan capital (similar as in Ireland) was also recognised as a major problem. A significant number of traditional enterprises were established as new enterprises by US farm respondents. The Common Agricultural Policy (CAP) with its system of quotas severely limits these opportunities for EU and Irish farmers, however, there are still areas which are not governed by quotas which present opportunities for development.

Where new and alternative enterprises were established on the farms surveyed they made a significant contribution to farm income, contributing in excess of 25 per cent of total earned income on over 57 per cent of farms. In addition, 66 per cent of respondents expected the income from these enterprises to increase further in the future. While horticulture and agriculture type enterprises were by far the most important alternative enterprises in the study, the results showed that there was a sizeable minority of non-agricultural/horticultural enterprises present on US farms. The most important reason highlighted by respondents for adopting new or alternative enterprises was to increase income. Given the critically low income of many Irish farmers, alternative enterprises if promoted and adequately supported could contribute significantly to income enhancement. Respondents mentioned a wide range of business factors when asked for other reasons for adopting alternative enterprises. They also mentioned that having unused facilities was a major factor in the decision to adopt an alternative enterprise.

References

Adapt100 (1986)
Ag. Diversification adds profit today; 100 ideas for farmers.
Des Moines, Iowa, USA, December 2-3

An Bord Glas (1997)
Vegetable imports explained
Horticultural Development Board, Republic of Ireland
Horticultural Quarterly Report, 11, 2, (Summer) 1-8

Bryant, Christopher R. (1989)
Entrepreneurs in the Rural Environment
J. Rural Studies, 5,4, 337-348

Center for Alternative Plant and Animal Products, (1991)
Alternative Agricultural Opportunities – A bibliography.
340 Alderman Hall, 1970 Folwell Avenue University of Minnesota, St Paul 55108

Commins, P (1996)
Agricultural production and Future of Small Scale Farming
In "Poverty in Rural Ireland"
Editors: Curtin, C., T. Hasse and T. Tovey
Combat Poverty Agency, Dublin, Ireland

Phelan, J. F. and A. Markey (1996)
Farm Household Income Trends in Ireland.
In "Crisis on the Family Farm – Ethics or Economics"
Editors: Carruthurs, S. P. and F. A. Miller
Centre for Agricultural Strategy, University of Reading, UK, 151-156.

Phelan, J. (1997)
Whose Competitiveness Counts?
in "The Challenges for Extension Education in a Changing Rural World"
Proceedings of the 13th European Seminar on Extension Education 31 Aug-6 Sept. 1996, Dublin, Ireland
Editors: Markey, Anne, Jim Phelan and Susan Wilson

Schuck, Nancy Grugens, Wayne Knoblauch, Judy Green and Mary Saylor (1988)
Farming Alternatives: A Guide to Evaluating the Feasibility of New Farm-Based Enterprises
Northeast Regional Agricultural Engineering Service, Cornell University NRAES-32, 88p.

Teagasc (1988-1997)
National Farm Survey-Agriculture and Food Development Authority of Ireland
Teagasc, 19 Sandymount Avenue, Dublin 4, Ireland

Session J Professional Training and Development

March 23, 1:00 - 3:00 p. m.

Session Chair - Peter Ewang

Location: Cascade Room

TITLE: An Examination of Extension Agents' Educational Needs Regarding Sustainable Agriculture in the Khorasan Province, Iran
AUTHOR: Mohammad Chizari, James R. Lindner, Mohammad Zoghie
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DISCUSSANT: Henry Bahn

TITLE: Serving Women's Groups in Kenya: In Service Training Needs of Extension Agents in a T & V Extension System
AUTHOR: Abdillahi S. Alawy
The Ohio State University
DISCUSSANT: Henry Bahn

TITLE: Extension Master Volunteer Competencies for Sustainable Environment and It's Implication for International Development
AUTHOR: Latif Lighari, Carl A. Salsedo
University of Connecticut
DISCUSSANT: Wayne Ganpat

TITLE: Conditions and Land Use Decisions in the LA Amistad Biosphere Reserve Buffer Zone in Costa Rica and Panama: Implications for Extension and Training Services for Buffer Zone Farmers
AUTHOR: Sheila Bliss Duffy
Texas A&M University
DISCUSSANT: Wayne Ganpat

AN EXAMINATION OF EXTENSION AGENTS' EDUCATIONAL NEEDS REGARDING SUSTAINABLE AGRICULTURE IN THE KHORASAN PROVINCE, IRAN

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An Examination of Extension Agents' Educational Needs Regarding Sustainable Agriculture in the Khorasan Province, Iran

Abstract

As Iran addresses its goal of self-sufficiency in the production of food and fiber products, sustainable agriculture is gaining interest within Extension and the Ministry of Agriculture as a means of achieving this goal. Dependence on pesticide and insecticide imports, compounded by a growing population, limited arable land, and high soil erosion, has lead to the call for more appropriate agricultural practice. Little is known, however, about what knowledge and educational needs agents have regarding sustainable agriculture practices. All Extension agents (N = 128) in the Khorasan Province, Iran were surveyed. Most agents reported they needed more training on sustainable agriculture practices before they could disseminate this innovation. To receive this information, agents indicated they wanted more flexible (less compulsory) training programs that focus on cross-national successful programs. Agents also indicated a need for more local research. Implications for these results are given and recommendations made.

Introduction

The human population is expected to increase by 1 billion people (the equivalent of an additional China) each decade well into the next century. Most of this population growth will occur in the developing nations (FAO, 1993; Swanson 1997), placing further stress on arable land bases. The concept of sustainable agriculture is a relatively recent response to interrelated environmental and economic concerns. In Iran, sustainable agriculture, is gaining popularity among extension agents, farmers, and various organizations and ministries, in particular, within Extension and Ministry of Agriculture (Chizari, Pezeshki, Lindner, 1998). Crosson (1992) defines sustainable agriculture as "... one that can indefinitely meet the demands for food and fiber at socially acceptable economic and environmental costs." York (1989) states the goal of sustainable agriculture should be to maintain production levels necessary to meet the increasing aspirations of an expanding world population without degrading the environment. It implies concern for generation of income, promotion of appropriate policies, and conservation of natural resources. Several factors are influencing these organizations to consider sustainable agriculture practices. Iran has limited arable land, compounded by high soil erosion. Iran's population is growing. Iran is dependent on rice, wheat, and meat imports. Iran is also dependent on pesticide and insecticide imports. Not many years ago Iran was self sufficient in agriculture (Nosrati, 1997). The goal of self-sufficiency in Iran has been the focus of recent research (Chizari, Karbasioun, & Lindner, 1998; Chizari, Pishbin, & Lindner, 1997; Chizari, Lindner, & Bashardoost, 1997; Pezeshki-Raad, Yoder, & Diamond, 1994). Extension agents have played an important role in helping agriculture systems overcome many problems. However, for agents to help with sustainable agricultural practices they must first understand sustainable agriculture concepts (Agunga, 1995).

Assessing educational needs of extension agents as an important element is well recognized among Extension Services and seen as a critical factor in the success of the organization. According to Buford, Bedeian and Lindner (1995), as Extension agents face the challenge of learning new skills to maintain their proficiency or become qualified for promotion, the importance of an effective staff training program for Extension agents becomes evident. These authors state further that to ensure Extension agents are well trained, extension management must determine training needs to increase agents capabilities. Similarly Chizari, Karbasioun, and Lindner (1998) note that Extension will be seriously limited in its ability to plan and execute effective educational programs and other technology transfer activities, without an adequate number of well-trained agents.

According to Alonge and Martin (1995), the first step toward adoptions of new ideas by farmers is to provide information on sustainable practices. What has emerged, however, is bipolar of evidence from proponents among Extension agents on this subject. Agencies and institutions engaged in information dissemination and educational activities often have personnel specifically charged with informational and educational responsibilities whom themselves have information and education needs (Rollins & Golden, 1994). Shahbazi (1993) warned that to deny the lack of knowledge and the educational needs of extension agents of Iran regarding sustainable agriculture is to deny that technologies related to agriculture are changing. Karami (1995) wrote that the problems facing sustainable agriculture in Iran, primarily focuses attention on ecological aspects. However, the author notes, perceptions, attitudes, educational training, and beliefs of extension agents are equally if not more important factors.

Agunga (1995) notes that Extension agents need to be trained in sustainable agriculture in order to develop their understanding, competence, and ability to teach and communicate the concepts to farmers and others. He further stated that the logic is simple: if Extension agents are not convinced of the value of sustainability, how can they be expected to educate farmers? The Extension Service, due to its large network of personnel, is in better position to formulate a cohesive structure for promoting sustainable agriculture education.

Purpose and Objectives

The purpose of this study was to determine educational needs of extension agents, and their general knowledge regarding sustainable agriculture in Khorasan Province, Iran. Specific objectives were:

(1) Describe educational needs of Extension agents regarding sustainable agriculture in Khorasan Province, Iran.
(2) Describe educational methods most useful to deliver sustainable agriculture information as perceived by Extension agents in Khorasan Province, Iran.
(3) Describe characteristics in relation to season and duration of appropriate educational programs to be implemented as perceived by Extension agents in Khorasan Province, Iran.
(4) Describe implementing effective activities for disseminating sustainable agriculture among farmers as perceived by Extension agents in Khorasan Province, Iran.

Methods and Procedures

Population

Extension agents (N=125) in Khorasan Province, Iran were the target population for this study. Ninety agents were selected by simple random sample to participate in this study. The Extension organization directory of the Ministry of Agriculture was used to locate the agents in each township within the Khorasan Province. The researchers verified the list before distribution of the survey.

Khorasan Province is the largest province of Iran (315,000 Square Kilometers), and produces many agricultural crops: Rice, wheat, rye, barley, cotton, potato, sorghum, corn, fruits, sugar cane, beef, and poultry. Khorasan is located in northeast part of the country and has 150,000 Hectare of arable land. Khorasan Province has population of 6.1 million. Three 3 million of its people live in rural areas.

Research design and data analysis

The research design used for this study was a descriptive survey method. A questionnaire was developed from the review of literature. The instrument consisted of four separate sections according to the purpose and objectives of the study. A five-point Likert-type scale was used in evaluating the responses. Content and face validity were established by panel of expert consisting of faculty members and graduate students at Tarbiat Modarres University, Iran. Instrument reliability was estimated by calculating a Cronbach's alpha. Reliability for the overall instrument was .79. A pilot test was conducted with 20 Extension agents in two townships of Tehran Province three weeks before the study. As a result of the pilot test, minor changes in wording were made in the questionnaire. Data were collected through a questionnaire mailed to each Extension agent in the Khorasan Province, Iran. Those who failed to respond were sent a postcard reminder. If the reminder failed to elicit a response, a follow-up letter and duplicate questionnaire were mailed. The response rate was 99%. Data collected were analyzed using Statistical Package for the Social Sciences, Personal Computer Version (SPSS Inc., 1991). Appropriate statistical procedures for description (frequencies, percents, means, and standard deviations) were used.

Results and findings

Selected demographics of survey participants are listed below. All of the participants had a Bachelor of Science in an agricultural related degree. However, only (8%) of the respondents were Agricultural Extension majors. All of subjects were male. Thirty -seven percent of respondents were between the age of 25-32 years old. A majority (35%) had one to five years Extension-Education experience. Most of the agents (60%) were married.

Objective One

As shown in Table1, 79% of the Extension agents reported integrated insect pest management as important to their educational programs. Seventy-six percent of the Extension agents stated that they need training on economical aspects related to sustainable agriculture. Sixty- percent of the participants indicated a training need on the role of agricultural Extension and education in dissemination of sustainable agriculture practices and development. The two least rated items were chemical use and application (55%) and use of legumes to soil crop nitrogen cycle (42%).

Table 1. Rank, frequency, percentage, mean, and standard deviations of educational needs of extension agents regarding sustainable agriculture (n=89)

Rank	Responses	Frequency	Percentage	M	SD
1	Integrated insect pest management	70	79	4.1	0.9
2	Economics of sustainable agriculture	68	76	4.0	1.0
3	Role of Agricultural Extension	60	67	4.0	0.9
4	Natural resource conservation	67	75	3.9	0.8
5	Organic matter management	59	66	3.8	1.0
6	Knowledge of crop varieties for each region	58	65	3.8	1.1
7	Soil conservation	54	60	3.7	1.1
8	Chemical use and application	49	55	3.6	1.1
9	Use of legumes to soil crop nitrogen cycle	38	42	3.5	1.2

Importance was rated on a scale where 5=high importance and 1=low importance

Objective two

According to Agunga (1995) "Knowing how Extension agents want sustainable agriculture information channeled to them will enhance the relationship between advocates of the movement and Extension agents"(p.182). Table 2 summarizes various educational methods Extension agents preferred receiving information regarding sustainable agriculture. The majority (95%) of Extension agents preferred visits to other countries with advanced sustainable agriculture programs. Visits to research centers and closer linkage with researchers was the next preferred educational method (86%), among agents. Short term inservice courses, and result and method demonstrations were also highly rated. The two least rated items were radio, and television programs among Extension agents (61%), and conference and seminar meetings (40%).

Table 2. Rank, frequency, percentage, mean, and standard deviations of educational methods extension agents preferred receiving information regarding sustainable agriculture (n=89)

Rank	Educational Methods	Frequency	Percentage	M	SD
1	Visits to other countries with advanced sustainable agriculture programs	85	95	4.7	0.6
2	Visits from research centers and closer working relations with researchers	77	86	4.5	0.8
3	Short term inservice courses	80	90	4.4	0.7
4	Result and method demonstration	70	79	4.1	1.0
5	Establishing discussions and lectures meetings at work	63	71	3.8	0.9
6	Individual contact with researchers	58	65	3.8	0.9
7	Extension publications	52	58	3.7	0.8
8	Radio and television programs	54	61	3.7	1.0
9	Seminars and Conferences	36	40	3.4	1.1

Preference was rated on a scale where 5=highly preferred and 1=least preferred

Objective three

As shown in Table 3, (47%) of Extension agents stated that winter is the most appropriate season for implementing educational programs. Spring and summer were each preferred by (25%) of respondents. However, only (3%) of extension agents indicated they prefer autumn as an appropriate season for implementing training programs.

Table 3. Frequency and percentage of appropriate season to implement educational programs as perceived by extension agents (n=89)

Season:	Spring	Summer	Autumn	Winter
Frequency	22	22	3	42
Percentage	25	25	3	47

Table 4 shows duration of effective educational programs as perceived by Extension agents. Although each subject would require a different duration time to be implemented properly as well as effectively, this question was asked in a general type of form, seeking approximate preferences of agents regarding duration of an effective educational programs regarding sustainable agriculture. The majority (52%) of the Extension agents stated that one to two weeks is appropriate for duration of implementing educational programs about sustainable agriculture.

Objective Four

Table 5 summarizes perceptions of Extension agents for implementing effective activities regarding sustainable agriculture among farmers. Most Extension agents (86%) reported an increase in agricultural Extension and education activities by Extension agents as an effective tool in disseminating sustainable agriculture among farmers. The second most effective activity ranked was introducing appropriate technology (74%). The two least rated activity were increasing the price of inputs which are harmful to natural resources (43%) and distribution of Extension publications (36%).

Table 4. Frequency and percentage of effective educational programs duration as perceived by extension agents (n=89)

Duration/week	One	one to two	two to three	more than three
Frequency	23	46	15	5
Percentage	26	52	17	6

Table 5. Rank, frequency, percentage, mean, and standard deviation of effective activities for implementing sustainable agriculture among farmers as perceived by extension agents

Rank	Activity	Frequency	Percentage	M	SD
1	More Extension-education	77	86	4.3	0.7
2	Introducing new technology	66	74	4.0	0.8
3	workshops and class	70	79	3.9	0.7
4	Using key and local leaders	59	66	3.9	0.9
5	Establishing associations	65	73	3.8	0.9
6	Formal education colleges of agriculture	43	48	3.8	1.0
7	Taking sustainable agriculture practices in considerations in ideal farmers	55	62	3.8	1.0
8	Price increase of inputs which are harmful to environment and natural resources	38	43	3.2	1.1
9	Distribution of Extension publications	32	36	3.0	0.9

Note: Only responses with which the Extension agents chose to " strongly agree" (rating of 4) or "very strongly agree" (rating of 5) were included

Conclusions and recommendations

Based on the finding of this study, the following conclusions were drawn and recommendations made.

Most of the Extension agents of Khorasan Province of Iran reported that they need training regarding sustainable agriculture, although there were higher educational needs regarding Integrated insect pest management, and economics of sustainable agriculture. Losses of crops to pests in developing countries are extremely large. Control of pests still depends heavily on pesticides. Unless the introduction of pests into new regions is prevented by quarantine measures or eradication, the control of imported and indigenous pests must depend on pesticides until effective pest management strategies can be developed. Therefore, sustainable agriculture education with agents should begin with these topics of high interest before moving on to other topic of equally important, but of less interest to agents. With the advances in the technology and improvements in high yielding crops, the future is good for farming. Sustainable agricultural systems should be both stable and resilient. Stability reduces risk and leads to continuity in income and food supply by fulfilling the short-term needs of farmers without incurring long-term environmental costs. Resilience permits adoption to change in the physical, biological, and socioeconomic environments. Sustainable agricultural systems should be environmentally acceptable; they should avoid erosion, pollution, and contamination; minimize adverse impacts on adjacent and downstream environments; and reduce the threats to bio diversity.

Extension agents in the Khorasan Province, Iran prefer to receive information on sustainable agriculture through visits to other countries with advanced sustainable agricultural programs and visits from research centers and closer working relations with researchers. The first of which would require substantial capital outlay and commitment from the Extension organization and Ministry of Agriculture. The second option presents a more fiscally palatable opportunity.

Agents in the Khorasan Province, Iran prefer to attend sustainable agriculture educational programs during the winter months, lasting from one to two hours. Inservice and training programs are typically dictated from policy makers in Tehran, Iran. Attendance is compulsory. Extension agents should be more involved in the inservice and training planning. This will encourage them to get more involved and give them a stake in the outcome of such programs. More Extension education and introducing new technology are key to implementing effective activities regarding sustainable agriculture among farmers.

Sustainable agriculture is a relatively new concept in Iran. Therefore, more research needs to be conducted in different Provinces to determine the educational needs of Extension agents regarding sustainable agriculture. Fundamentally, achieving sustainable agriculture under the mounting pressure of human population growth will demand that the world's agricultural productive capacity be enhanced while its resource base is conserved. If the well-being of the world's less advantaged people is to improve in any lasting sense, long-range concerns about food security and the health of natural resources must be addressed in planning future economic and social development. Research will be essential to this task. Extension agents will be better equipped to deal with the barriers to implementing sustainable agriculture practices once they are better educated and trained. Inservice programs are needed to help agents understand new practices and their applications in various farming systems.

It is the goal of Iran to become self-sufficient in food and fiber production. Results from this study may serve as a basis for further research regarding sustainable agriculture, and educational needs of extension agents. It is clear that education has a role in helping Extension agents, policy makers, and others in developing methods to solve problems associated with natural resource management and profitable farming systems. For sustainable agriculture to succeed, policy formulation must arise in a new way. Policy processes must be enabling and participatory, creating the conditions for sustainable development based more on locally available resources and local skills and knowledge. Effective policy processes will have to bring together a range of actors and institutions for creative interaction and address multiple realities and unpredictability. The extent to which these problems and issues will be solved systematically remains uncertain. Finally, more research is needed to determine the relationship between the goal of self-sufficiency and sustainable agriculture practices. The success of sustainable agriculture depends not just on the motivations, skills, and knowledge of individual agents and farmers but, on action taken by groups or communities as a whole. This makes the task more challenging. Simple extension of the message that sustainable agriculture can match conventional agriculture for profits, as well as produce extra benefits for society as a whole, will not suffice (Swanson, 1997). As the availability of new arable lands decreases, sustainability will require continual enhancement and improved management of soil and water resources and the protection of bio diversity in the system.

References

Agunga, R. A. (1995). What Ohio Extension agents say about Sustainable agriculture. Journal of Sustainable Agriculture, 5 (3):169-178.

Alonge, A. J. & Martin, R. A. (1995). Assessment of the adoption of sustainable agriculture practices: Implications for agricultural education. Journal of Agricultural Education, 36 (3):34-42.

Buford, J. A., Jr., Bedeian, A. G., & Lindner, J. R. (1995). Management in Extension (3rd ed.). Columbus, OH: Ohio State University Extension.

Chizari, M., Karbasioun, M., & Lindner, J. R. (1998). Obstacles facing extension agents in the development and delivery of extension educational programs for adult farmers in the Province of Esfahan, Iran. Journal of Agricultural Education, 39 (1):48-55.

Chizari, M., Pezeshki, G., & Lindner, J. R. (1998). Perceptions of extension agents regarding sustainable agriculture in the Khorasan Province of Iran. Conference papers of the Annual Conference of the Association for International Agricultural and Extension Education. Tucson, Arizona.

Chizari, M., Pishbin, A. R., & Lindner, J. R. (1997). Self-perceived professional competencies needed and possessed by agricultural extension agents in the Fars Province of Iran. Journal of Extension Systems, 13.

Chizari, M., Lindner, J. R., & Bashardoost, R. (1997). Participation of rural women in rice production activities and extension education programs in the Gilan Province, Iran. Journal of International Agricultural and Extension Education, 4 (3), 19-26.

Crosson, P. (1992). Sustainable food and fiber production. Paper presented at the Annual Meeting of the American Association for the Advancement of Science. Chicago.

FAO (1993). The challenging of sustainable forest management: What future for the world's forest. Rome: FAO.

Karami, E. (1995). Agriculture extension: The question of sustainable development in Iran. Journal of Sustainable Agriculture,5 (2):47-54.

Nosrati, S. (1997). An investigation of factors influencing the attitude of rice planter volunteers toward planting Bersim clover in Talesh Region by the use of Delphi technique. Unpublished master's thesis Tarbiat Modarres University, Tehran, Iran.

Pezeshki-Raad, G., Yoder, E. P., & Diamond, J. E. (1994). Professional competencies needed by extension specialists and agents in Iran. Journal of International Agricultural and Extension Education, 1 (1), 45-53.

Rollins, J. T., Golden, K. (1994). A proprietary information dissemination and education system. Journal of Agricultural Education,35 (2):37-43.

Shahbazi, E. (1993). Development and rural extension. Tehran, Iran: Center for Tehran University publication.

Swanson, B.E. (ed.). (1997). Improving agricultural extension: A reference manual. Rome: FAO.

York, E. T. (1989). Sustainable agriculture production. International Agriculture, 4 (4). Champaign, IL. University of Illinois, Urbana-Champaign.

Serving Women's Groups in Kenya: In-service Training Needs of Extension Agents in a T & V Extension System

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Serving Women's Groups in Kenya: In-service Training Needs of Extension Agents in a T & V Extension System

Abstract

The abundance of information currently available to extensionists on African female farmers has not eradicated obstacles to women's access to technology and extension training. This study points to the inherent problems associated with the in-service training for those agents who are in direct contact with female farmers in the developing world and specifically in Kenya. Extension programs will benefit farmers only if they are planned and staffed by competent and well trained personnel. However, it was found that even the well-trained extension agents had major problems supporting women's projects and female farmers in general. According to a 1991 UNDP report, 40% of all extension agents in developing countries lack adequate training. Consequently, the potential for Extension to play an important role in technology transfer is extremely limited. Twenty-five international extension experts in the U.S. and twenty-seven extension agents from Kenya were interviewed in 1993 and 1996 respectively. Data was collected and analyzed qualitatively. Study findings indicated that in-service training was deficient in: (a) the process and content; (b) training resources; and (c) relevancy to agents and women's groups served. Both the experts and the agents identified role-playing, agents and women's groups' participation in planning and actual farm-demonstrations as the most effective strategies for in-service training for the field agents. Excessive lecturing and "ignoring" women's specific farming needs were mentioned as the least productive aspects of the training process.

Introduction

Women's groups continue to be crucial contributors in the agrarian economy of Kenya. Although women farmers' efforts have been recognized for more than three decades, there has been very little resources spent in improving the quality of training they receive from Extension agents. On one hand the problem manifests itself in the few numbers of the Extension agents in the field, while on the other hand is the apparent discrepancy between the training curriculum in relation to the changing needs of the women groups. Agents who are not adequately trained are an important factor responsible for slow progress in food production in Kenya.

In-service training of Extension field personnel is an important strategy for ensuring sustainable agricultural development programs in developing countries. One way to effectively improve and support Extension agents serving women's groups is through appropriate in-service training. Such training creates additional knowledge, technical, and professional skills that may be imparted to extension workers, thus increasing agent's effectiveness. At a time when enormous resources are utilized for training field agents, more emphasis should be placed on the quality of training that is provided to workers.

Regular in-service training is a dominant constituent of the Training and Visit (T & V) System of Extension. In this approach, much attention is given to improving specific agents' technical skills, which will make them more efficient. However, little progress has been made in providing effective training of extension agents, especially field agents who are in direct contact with farmers (Rogers, 1969; Galagali & Lindt, 1983). In this study the author utilized international experts opinion as well as the opinions of the field agents themselves to identify in-service training needs of Extension field agents working with women's groups in Kenya's district of Kwale.

Purpose and Objectives of the Study

The purpose of this paper is to investigate extension agents' in-service training needs and their preparation in addressing the changing needs of women farmers in Kenya. Specific in-service training needs of field agents were examined from the perspectives of agents themselves and recognized international Extension-education experts.

This information provided valuable indicators as to what aspects of existing in-service training should be prioritized, improved, emphasized, and/or discontinued. Thus the study was critical in suggesting modification of specific aspects of in-service training for Extension field agents in developing countries. Additionally, specific recommendations were provided for those agents who served women's groups.

The specific objectives of the study was to identify in-service training needs for Extension workers who served women's groups relating to: (1) The process and content of the in-service training program; (2) human and material resources for the training (3) participants value of the training programs (4) relevancy of the in-service training programs in relation to the women's groups; and (5) agents' and experts' recommendations on improving in-service training needs.

Methods and Data Sources

Data from Extension agents was collected in 1996 in Kwale district Kenya through focus group and face to face interviews. Information from the international extension experts was collected through scheduled telephone interviews in the USA in 1993. This research used multi-method research approach that combined in depth face to face interviews, participants' observation, telephone interviews, and documents evaluation. A total of 27 Extension agents from Kenya and 25 experts based in the United States were sampled and interviewed.

In addition, information from sixty-three focus-group interviews of women's farmers, conducted in Kwale, was used to compliment data relating to the accessibility of Extension agents to the women's groups. All interviews were tape-recorded, transcribed and summarized on note-cards using the *Constant Comparative Method* of qualitative analysis (Glaser & Strauss, 1967), a method involving categorization of qualitative data. Three observers (multiple-raters) reviewed the data and made recommendations to the final analysis and reports. According to Lincoln and Guba (1985), inductive analysis aims at uncovering embedded information and making it more explicit. There are four steps involved in the *Constant Comparative Method*:

1) Coding the data into as many categories as necessary;
2) Integrating categories where possible;
3) Delimiting theory or main themes; and
4) Examining the resulting coded series of memo.

To permit precise description of relevant content, raw data was organized into aggregated units (Glaser and Strauss, 1967), a categorization technique involving sorting coded units into provisional categories. Glaser and Strauss further suggested that this analysis be presented in a narrative form, (e.g., using examples from the data to clarify concepts and to demonstrate relationships between analysis and present conditions in the field).

Three observers (multiple raters) were provided with copies of all transcribed interviews and the initial analysis report. A copy of the interview instrument was also shared with the observers. All documents were presented in a way that allowed the observers to verify and validate the findings of the analysis themselves. Few corrections were suggested and implemented accordingly.

Each observer was sent copies of the final documents and asked for their careful review and reflection. A telephone conference was arranged with each observer to discuss the initial findings and their recommendations on the presentation of the findings. As a result of their suggestions, the original analysis was reviewed and categories narrowed. A second analytical report was prepared and sent again to the observers for final comment. The final copy of the analysis report was prepared after a careful review by the author and the then academic advisor.

Study Findings

Study findings were primarily based on the qualitative data analyzed from international expert's survey and Extension agents' group interviews. The following themes comprised the final report of the study:

Theme 1: The Process and Content of In-service Training

Three issues formed the focus of this theme. First, agents' communication training needs and inclusion of teaching communication skills in the training sessions were discussed. Secondly, the responses focused on the relevance of training sessions related to Extension agents and their primary clients--the women farmers. The third issue determined the most and the least productive aspect of training sessions.

(a) Communication Skills

Twenty responses were obtained from the experts and twenty-seven agents contributed their perceptions to the issue concerning the content of the in-service training topics for agents. Most responses indicated an inadequacy in meeting agents' communication training needs. Majority of the participants indicated that the programs lacked teaching of process and delivery skills. Most of the experts and all agents interviewed in Kwale indicated that T&V in-service training programs offered adequate training in technical agriculture, but were inadequate in fulfilling training needs in the behavioral sciences, namely communication skills, sociology, and specific approaches to women agriculturists. "These areas are critical in Extension teaching yet received very minimal attention". T&V training sessions do not include training in teaching methods. As one expert expressed, this was due in part to T& V's approach itself; there were always pre-formulated solutions and recommendations for any technical field problem. Another expert stated that in any one in-service training (which were conducted every two weeks) the trainer's objectives, it appeared, were to transfer these recommendations to the participants (interview #14).

More than half of the respondents suggested that for the Extension agents to utilize adult education training techniques, trainers must teach and utilize these techniques during the sessions. It was noted by these experts that field agents were the people with the greatest Extension training needs (both technical and process/delivery skills), yet in most cases these were the "receiving the least training, scant resources, and the lowest pay" (interview #1). All experts indicated lack of proper needs-assessments and situational analyses as the major cause. "Need assessment is not conducted before or even after the training sessions" (interview # 22). This expert added, "if farmers' problems were unknown to the agents, then meeting their needs as well as those of Extension agents became a problem".

Majority of the participants agreed that gender, religious or ethnic issues relating to farmers were rarely discussed. Cultural orientation of the farmers, according to some agents, was not part of the T&V curriculum for in-service courses. However, about half of the experts indicated that farmers' cultural issues were being discussed during the training sessions, at least not to a level they thought adequate. One expert who agreed with this observation suggested that "some of the trainers were alert on such needs but more of the technical trainers were not" (interview # 23).

(b) Relevancy of the Training Sessions

All agents and majority of the experts who responded to questions regarding this issue reported several biases regarding the training sessions. Their responses have been organized in the following manner. Half of the experts indicated that trainers gave more attention to field crops and livestock. In Kwale, field crops included the popular perennials such as coconut and cashew, mainly the province of large-scale farmers majority of who were male. In most cases it was reported that topics emphasized techniques relative to farm enterprises for specific locations, but not for specific gender.

Nearly half the experts interviewed suggested that there was more of a negative bias towards home economics than any other topics. The experts attributed this to the unavailability of home economics trainers. Most of the trainers were male with little or no family-life background. Some experts had the impression that home economics was not included in T&V training programs. Agents contended that when female farmers were mentioned in their training sessions it was mainly in reference to kitchen gardening and/or home based cultivation. In Kwale specifically, female farmers were the largest contributors of food production as well as key players in soil and water conservation.

(c) The Most and Least Productive Aspects of the Training

Experts identified role-playing and participation by trainees as the most effective methods of teaching. Although the responses were worded differently, the ideas of direct participant involvement in training was mentioned by all experts and was identified as the most effective aspects of the sessions. Extension agents emphasized the need to involve the women groups in the planning of the training. Both the experts and the Extension agents identified excessive lecturing as the least productive method of the training.

Theme 2: Resources For the In-service Training of Extension Agents

All the experts addressed issues regarding the available resources for in-service training programs in developing countries. Extension agents commented about the resources at their disposal. First, the experts discussed human resources in relation to availability of trainers, agents' gender distribution their average qualifications, and their teaching skills. Secondly, the agents discussed material resources in terms of their availability, quality, and usage in the training sessions. Transportation is the third component of this theme and was discussed in terms of availability of vehicles and good roads in developing countries. Both experts and the agents contributed equally to the transportation discussion.

(a) Human Resources

According to the larger majority of the experts who responded to questions on this theme, T&V trainers, also referred to as *Subject Matter Specialists*, were fairly available in developing countries of Asia and a few southern African countries. Twelve experts who had worked in (mostly) African countries indicated that in Africa, some countries in Asia, and the Caribbean Islands, Extension trainers were not adequate. Although this varied from expert to expert depending on (1) the country of their experience, (2) the countries' economic conditions, and (3) the time period referred; countries of sub-Saharan Africa and the Caribbean Islands seemed to have been affected the most by the shortage of trainers.

Half of the experts contended that there were usually enough educated people who have good agricultural backgrounds in these countries. However, the problem is finding indigenous Extension workers who have a practical understanding of female farmers' specific production constraints. One expert referred to practical understanding not only in understanding the technology being transferred, but also in understanding the culture and sociology of rural people (interview # 22). About a third of the experts suggested that although some qualified trainers were available in the Ministries of Agriculture, they were often assigned to administrative duties. In most instances, the administrative jobs were unrelated to the subject matter specialization of the agricultural officers (interview # 1).

One general observation made by these experts was that trainers were not adequately trained in delivery and process skills (interview # 16). One expert added-- "in many cases, trainers available are those with no family life experience" (interview # 16). One expert described a trainer as "usually urban-raised university or college graduate with little or no experience of the local culture and surroundings" (interview # 21). The expert added that few trainers were trained in Extension methods and "lack practicality in their approaches to training and solving farmers problems" (interview # 22).

These experts were of the opinion that the actual training becomes a series of lectures usually based on technical agriculture. "Most trainers don't utilize good communication skills because they do not know them" (interviews # 5). Average qualifications of the trainers varied greatly from respondent to respondents largely due to the country of experience. Most experts who had worked in African countries described the average academic qualification for trainers as ranging between a bachelor's degree to a two to three year diploma or certificate. In India and most Asian countries, the average qualification of the trainers was between a Bachelor of Science and Master of Science degrees. However, one expert suggested that most of these degrees were in physical sciences related to technical agriculture (interview # 10). In Kwale majority of the trainers had a 3 year diploma certificates.

(b) Material Resources

More than half of the experts stated that the important factor affecting availability of teaching materials was the economy of a particular country. Demonstration farms, classrooms, or training centers were reported to be available in most of the countries cited as examples by experts. One expert, however, reported that there was "too much reliance on demonstration farms" (interview #23) and cautioned that this was not a good practice since, in most cases, conditions at the demonstration farms (fertility, moisture level, etc.) at the demonstration farms were not always like typical farmer plots.

Majority of the agents who had worked in Kwale suggested that the available teaching resources were very old, of poor quality, and in-sufficient supply for Extension trainers and agents. However, One important concern raised by all agents was the actual importance of these teaching materials and facilities. "Although the teaching materials and facilities would certainly help in training Extension agents, trainers can still be successful in teaching without necessarily using these resources" (interview # 2). However, this would only be possible if the trainers were effective in their duties of training the agents. In essence the lack of these resources is not as important as the lack of the trainers' teaching skills "There was need to have trainers who are capable of incorporating creative teaching skills in their training workshops" (interview # 2). This expert indicated that "trainers can still do a better job in training Extension agents without necessarily having to use expensive teaching resources".

Basically respondents suggested that Extension trainers in T&V systems need more exposure to teaching techniques which make use of locally available training resources. However, one expert indicated that developing countries need to take in-service training more seriously by allocating adequate funds to these programs. This expert advocated providing better training equipment and materials to both trainers and trainees (interview #7). The expert was referring specifically to microcomputers, copying machines, and any other equipment that may help trainers produce quality-training materials consistently with minimal cost.

(c) Transportation

All the experts responded to questions regarding agents' transportation needs. Majority indicated that the lack of transportation facilities is a major weakness of the T&V system in general. Most training participants depend on public transportation. One expert explained that in many developing countries, "the public transport system is not itself satisfactory" (interview # 10). He pointed out that the problem lies not only on poor roads, but also with the availability of motor vehicles.

According to the agents interviewed, most of the roads were impassable during rainy seasons, incidentally, rainy seasons, are the busiest times of the farming operations. In most situations, substantial numbers of vehicles were reported by agents to have been available but most of them were grounded due to various reasons. Some of the common reported problems included: (1) lack of spare parts and repair facilities; (2) lack of funds for fuel; (3) exclusive use of vehicles by senior officers; and (4) other bureaucratic situations (interviews # 1, 2, 6, 11, 16, and 22). All the twenty-seven agents felt that transportation was a very serious problem, which should be dealt with immediately if T&V had to succeed. T&V in-service training programs involved a great deal of traveling for both agents and trainers; for this reason, the system must be supported by a good transportation system.

Theme 3: Participants' Value of the Training Sessions

All experts responded to questions discussing this theme. Two thirds of the experts responded that Extension agents value the training sessions. The remaining one third indicated that Extension agents only value the sessions if they were going to learn new skills and knowledge. Three experts stated that Extension agents usually never value the sessions. A large majority of experts indicated that T&V meets the objectives of Extension as defined by individual federal governments, but that its ability to meet the needs of rural people, especially women farmers is questionable (interview # 10). One expert stated that the "real needs of female farmers should determine training needs of Extension agents involved" (interview 10). Most of the experts interviewed commented that even where the training met the job requirements, it only fulfilled technical agriculture requirements.

One third of the Extension agents interviewed agreed that training sessions offered timely training. The rest of them reported that although the trainers tried to schedule the programs with the farming calendar, different geographical areas and unpredictable weather conditions made timing extremely difficult and in some cases impossible. He added "although the training programs were conducted on time at the national level, by the time they reached the village level, it was already late for the major farm operations".

All the agents indicated that female farmers' involvement in this process was completely absent. Numerous problems were cited, but the important ones mentioned included bias and specific communications problems related to women farmers. This was evidenced in the fact that over 90% of the agents were males. However, both experts and the Extension agents agreed to the need of conducting proper need assessments. The experts identified two levels of conducting needs assessment for this purpose: First, between female farmers and agents, and secondly, between agents and trainers. Both levels were rated poorly by experts (citing needs assessment not conducted or not conducted inadequately).

Attendance for the training sessions was reported to be very good by nearly all of experts and the agents themselves. From the discussions two categories of attendance emerged: (1) A situations when attendance was compulsory, and there were positive financial incentives in the form of per diems (night outs); and (2) when sessions provided a break from the regular fieldwork for the agents. The sessions became places for renewing social acquaintances and meeting old friends. However, all agents indicated that they were not reimbursed for their travel and/or boarding expenses involving in-service training, and this affected their attendance. In both situations, learning new skills and knowledge was not suggested as a motivating force in encouraging attendance.

Theme 4: Participants' Recommendations

"Improvement of T&V in-service training is an obvious need because training of Extension agents is certainly a very critical link for the success of T&V" (interview # 2). The expert strongly suggested that T & V Extension system would not survive if the agents were not trained to use better process skills. In the case where agricultural production is mainly by women farmers, then, it made more sense to incorporate them in the need assessment and the whole process of in-service training.

"In-service education in T&V must be given the priority it deserves by making it a budget line item of all the Ministries of Agriculture in developing countries" (interview # 1). Additionally, agents argued that in-service training must be an on-going process in order to keep the extension workers up-dated on new methods. "Better trained extensionists will not only be effective, but will work more closely with farmers, whether male or female, thus listening to and addressing their real needs. If this happened, the Extension agencies will most likely formulate realistic solutions for farmers' problems" (interview # 1). Most experts believed that at this stage the top-down approach will cease to exist and grass-roots participation will be established. One expert suggested that the development of other alternatives should also be considered in trying to reach rural farmers. He added, "rural radio communication can be used effectively to transmit messages to more farmers at a low cost without discriminating on who will listen or not" (relative to T&V cost) (interview #5).

Researcher's Recommendations

1. Specific strategies need to be developed to balance technical and behavioral sciences in T&V training sessions. Competent trainers in technology, gender issues as well as communication skills must be enlisted for conducting effective sessions.

2. Trainers should employ variety a of functional teaching methods. Role-playing, and_participants' discussion should be given more time than trainers-dominated methods (e.g., lecturing and counseling). Trainers should also encourage group discussion, seminars, and panel discussion so as to allow more trainees and female farmers' participation. An F.A.O. publication, (1992) lists the major steps in the training process as to: (1) identify and verify the training needs; (2) determine training content needs; (3) specify training objectives; (4) select a training approach and training methods; (5) identify needed training resources; (6) develop the training plan; (7) develop tests for measuring trainees learning; (8) develop training support materials; (9) Tryout and revise training methods and materials; (10) implement training; and (11) evaluate (p.10). A similar process if adopted by trainers in T&V systems, will make the training sessions more effective.

3. Extension departments should make accessible to trainers simple training charts, pictures, chalkboards, overhead projectors e.t.c. Additionally, plans to provide micro computers, photocopying machines and video facilities should be developed so as to allow trainers as well as agents to prepare better teaching materials. Extension departments should allocate special budgets to develop such resources.

4. While focusing on the farmers' problems, trainers should also equally incorporate other topics such as home economics and livestock, and involve both female and male farmers in their areas in order to balance their training sessions and services.

5. During their formal education, trainers should take such courses, which broaden their technical skills, as well as courses that will develop their process skills. The following types of courses were recommended for future trainers in T&V systems in developing countries: gender analysis and methods for field workers in agriculture; rural sociology (particularly in the areas of diffusion of innovations to rural communities and understanding of culture and its effect on change); communication of agricultural concepts; evaluation of development and/or educational programs; needs assessment; data collection and analysis; teaching methods especially in adult education; anthropology (particularly in the study of language and culture of the rural people); and administration, supervision and leadership.

6. Universities and agricultural colleges in developing countries should develop opportunities for experienced Extension trainers to continue their formal education. Academic credit, or certificates, etc., should be offered for the promotion purposes.

Educational Importance

This study is expected to contribute to Extension education theory, knowledge, policy and extension programming. From an extension-education point of view, the study provided needed data on conditions that impact on in-service training and the implementation of agricultural Extension policies and programs for areas that have a lot of women farmers. The combination of expert's opinions and in-depth contributions of the Extension agents themselves promises a detailed description of issues in sufficient depth, with in-built validity checks. Such data will provide a basis for information regarding the design of development and in-service training packages for rural Extension workers in Kenya, thus improving the integration methodologies and support for female farmers in agricultural projects. The study will also contributed to the conceptual innovations in the study of in-service training needs of Extension agents working with women's groups. Lastly, the study's findings identified feasible strategies to improve the assessment of agents' in-service training needs, and thus refine Extension's approaches to serving women's groups and female farmers in general.

Reference

Buvinic, M (1984). Projects for women in the Third World: Explaining misbehavior. Washington D.C.: *International Center for Research on women.*

Glaser, B. B., & Strauss, A. L. (1967). The discovery of grounded theory. Chicago: Aldine Publishing Company.

Krueger, R. A. (1994). Focus groups: A practical guide for applied research (2nd ed.) Thousands Oak, CA: Sage Publications.

Lincoln, Y.S. & Guba, E.G. (1985). Naturalistic Inquiry. Beverly Hills CA: Sage.

Lynton, R. & Udai Pareek (1976). Training for development. Homewood, Illinois, R.D. Irwin.

Moore, M. (1984). Institute development, the World Bank and India: new agricultural Extension programme. *Journal of Development studies,* 20 (3).

Moser, C. O. N. (1989). "Gender planning in the Third World: Meeting practical and strategic gender needs" *World Development* Vol. 17, No. 11, p. 1812.

Nwomonoh, J. N. (1994). The Role of African Women in Rural Development: The Nigeria Case. In James, V. U. (ed.) *Environmental and Economic Dilemmas of Developing Countries*. Praeger: London.

Okojie, C.E.E. (1996). Women in the rural economy in Nigeria. In P. Ghorayshi and C. Belanger (eds.) Women, work, and gender relations in Developing countries: A global perspective. Westport: Greenwood Press

Rogers, E. (1969). Diffusion of innovations. New York, Free Press of Glencoe.

Rogers, B. (1980). *Domestication of Women: Discrimination in developing societies*. New York: St. Martins Press.

World Bank (1989). *Kenya. The role of women in economic development, World Bank country study*. Washington D.C.: World Bank.

World Bank (1993). Evaluation of the Performance of T&V Extension in Kenya. World Bank Technical paper No. 208: African Technical Department Series. Washington D.C.: World Bank.

EXTENSION MASTER VOLUNTEER COMPETENCIES FOR A SUSTAINABLE ENVIRONMENT AND IT'S IMPLICATION FOR INTERNATIONAL DEVELOPMENT

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ABSTRACT:
The mission of the Cooperative Extension system is to disseminate the research based, practical, useful information to the citizens for better living. In USA, since the creation of Cooperative extension service in 1914, it has utilized grassroot community leaders and volunteers to extend the outreach of Cooperative Extension educators. The critical community issues formulate the local extension programs and delivered to create educational awareness. Environmental issues have been on the fore front of Cooperative Extension educational programs. Implementation of such programs have shown significant results towards the sustainability of our environment and natural resources. Event though this model is basic and common to our American communities, it has not been fully utilized in the developing countries. Many nongovernmental organizations (NGO) and the US Peace Corps are leading the way to show this model of volunteer use for sustainable environment, to the developing countries, there continues to be a wide open field of opportunities. This study explores and highlights the importance of volunteer training for sustainable environment and it's implications for international development.

INTRODUCTION: The mission of the Cooperative Extension in general is to disseminate research-based, useful practical information amongst the population to enhance quality of life. Its philosophy is based on helping people help themselves. In the U.S.A., since the creation of Cooperative Extension System in 1914, it has fulfilled its mission through well defined goals, objectives and annual plan of work. Well educated and trained faculty and staff members housed on and off-campuses of the Land-Grant college, have carried out those goals, objectives and plans of work through a network and involvement of community leaders and volunteers. Many segments of Cooperative Extension System have provided specialized training to develop and involve a very focused group of interested volunteers known as master volunteers. The master volunteer training programs are based on competencies and skills appropriate for the subject matter to be delivered. The most common examples of such a group of volunteers are Master Gardeners and Master Farmers. The master volunteers are trained to handle focused information such as farming, gardening or other related environmental issues. Sustainable environment is a critical issue in many communities and countries. It encompasses the related subject matter from multiple fields with a focus on sustainability and environment. The educational competencies needed to train successful master volunteers for outreach education are subjective to the local needs, geographical location, identification of critical issues, subject matter and outcomes expected. In Connecticut, one of the subject matters identified by the Extension personnel, critical to sustainable environment was home horticulture and the use of pesticides.

Master volunteer competencies were identified by a team of Extension Educators and were incorporated into a training manual/handbook to be taught into twelve six hour sessions. The competencies were divided into following training units: Orientation and Public service, Botany/Plant Physiology, Soils and Fertilizers, Entomology, Plants & Environment, Pest management, Plant Pathology, Woody & Herbaceous Ornamentals, Tree & Small Fruits, Vegetable gardening, Lawns/Turf and Pesticide safety. Master volunteers were recruited and trained. Pre and post tests were administered to evaluate the competencies learned. The trained Extension Master volunteers were required to volunteer sixty hours of community service by disseminating the useful, practical gardening information to the home gardeners and to promote a sustainable environment. This master volunteer training and utilization model has been used in all states of USA with some variations.

Similar models have been used in other countries by various organizations to promote sustainable environment. According to Peter Devereux, "Organizations are working to promote conservation efforts in Central America. Project goals consist of protecting the environment and encouraging the inhabitants to have sustainable lifestyles. In Nicaragua, farmers are learning to fertilize their crops with waste, make natural pesticides, and increase soil stability and fertility. In El Salvador, groups are fighting to protect the environment and raise awareness. In Guatemala, volunteers are examining ways development can occur without harming the environment."(1) The "Health and Environment, a nongovernmental organization of volunteers and Dutch Physicians in Environmental medicine, ascertain exposure levels to pollutants and evaluates environmentally-related health complaints from citizens. A neutral reporting center was established in 1994 to provide non-prejudicial evaluation of environmentally-related health concerns."(2)

PURPOSE: The purpose of this paper was to identify the educational competencies and competency units, needed to train extension master volunteers for sustainable environment in Connecticut and its implications for international development. The specific model studied in this study was Extension Master Gardener/Master Farmer training model. This study reviewed the units of competencies used in this model to train Extension Master volunteers in Connecticut. It also explored the possible uses of similar model for sustainable environment in international development. According to Donald J. Eberly, "Young people have been called to community service since President Franklin D. Roosevelt created the Civilian Conservation Corps in 1933"(4). This model is still a candle light for many communities and countries.

METHODOLOGY AND DATA SOURCE: A comprehensive survey was conducted amongst the related faculty, staff and program leadership of the Cooperative Extension System in Connecticut to identify the areas and educational competencies needed to train extension master gardeners to provide educational outreach for sustainable environment. A questionnaire was developed by the authors, tested with the panel of Master Gardener program training coordinators. The competencies were divided into the training units. Each unit was organized to provide an outline of contents to be covered. The curriculum used in the training of such volunteers in Connecticut was compared to the competencies identified by the master volunteer program trainees for validity. The survey questionnaire was pretested for its reliability and validity. The population of this study was all the related faculty, staff and program leadership team involved in training extension master gardeners and a group of master volunteers enrolled in this program. Surveys collected from the volunteers themselves asking their perspective of the competencies needed, were also studied for further validity and reliability. The competencies identified were also compared with the list of competencies identified by the program coordinating team. The data collected was analyzed and tested for significance of variance.

RESULTS AND CONCLUSIONS: As a result of this study, it was found that faculty and staff of Connecticut Cooperative Extension considered several educational competencies critical to the training of extension master volunteers for outreach education and sustainable environment. There was no significant difference between the competencies identified by the volunteers and Extension staff/faculty. The identified competencies were divided into the categories of subject matter disciplines. Each category formed a unit or a sub-unit of this training. There were fifteen units or sub-unit identified as critical for this training. The areas of critical competencies identified to be utilized for training volunteers formed the core curriculum. The training units/sub-units identified, were as under:

1. History, mission, goals and purposes of Cooperative Extension and Extension Master gardeners training program
2. Plant Physiology and Botany
3. Soils and fertilizers
4. Basic Entomology and understanding of harmful and beneficial insects
5. Plants and their Environment
6. Pest Management
7. Plant Pathology
8. Woody Ornamentals
9. Herbaceous Ornamentals
10. Tree fruits
11. Small fruits
12. Lawns and Turf management
13. Vegetable gardening
14. Pesticide safety

15. Volunteerism, Public Service and Office procedures

It was also found that the following areas of collaborations existed amongst the faculty/staff and the community volunteers, working jointly, towards the goal(s) of sustainable environment:

1. Extension Master Gardeners trained including the use of latest computer technology
2. School Age Environmental education programs
3. 4-H camps environmental educations laboratories
4. Forestry Stewardship programs
5. Sound Gardening program
6. Master composting program
7. Pesticide applicators training programs

Even though this study finds the limited use of this training and involvement of volunteers in sustainable environment, it also recognizes the absence of such models in many developing countries. The challenges might be different and the level of difficulty of implementing such models be different in various developing countries. Further studies are recommended to look into those factors.

EDUCATIONAL IMPORTANCE: This study was able to investigate and identify the educational competencies needed to train master volunteers for a sustainable environment. Since the implementation of this master volunteer training model in Connecticut (1978), The Cooperative Extension System in Connecticut has trained and utilized more than two thousand Master gardeners, with hundreds of thousands of thousands of volunteer hours to disseminate useful, practical gardening information for the public with the expected results of promoting a sustainable environment. Developing countries, with agricultural economies and larger segments of population unemployed can be usefully trained and utilized to educate the masses and to promote a sustainable environment. This model can be very valuable for international development to promote and create sustainable environments. This model was found to be of critical importance, particularly in times of limited resources, to extend the outreach of Cooperative Extension many times. The results shared in this study could be replicated in any state of this country or any other countries.

There exists a greater need to introduce and encourage this model of master volunteers for a sustainable environment and international development. This country (USA), has been at the forefront to enlighten many cultures and communities around the world through the involvement of its most popular volunteer program-The Peace Corps. According to the US Department of State Dispatch of July 5, 1995, "Today, Peace Corps Volunteers remain engaged on the front lines of the struggle for sustainable development all around the world. They are preserving forests and creating systems of purified water. They are building roads and helping to establish small businesses. They are fighting AIDS and teaching literacy. They are assisting in disaster relief and delivering maternal and child health care. They are combating hunger and poverty."(3)

This model of training strongly relies on the competencies identified locally and applicable to the local needs. This can be of a great importance to the Agricultural and

Extension education systems of the developing countries with limited resources available. To validate the conclusions and the results of this study, further research is needed with different variables of locations and needs.

REFERENCES:

1. Devereux, Peter. "Central America's struggle for sustainability". *Habitat Australia*, June 1997 Volume 25, Number 3, p30.

2. Williams, Frank L'Engle, "Citizen and biomedical responses to the Dutch pollution/health debate". *Journal of Environment and Development*. June 1997. Volume 6, Number 2, p187.

3. *US Department of State Dispatch*, July 5, 1993, Volume 4, Number 27, p475.

4. Eberly, J. Donald. "The National Service Literature". *CHOICE*, March 1994. Volume 31. Number 7. P1079

CONDITIONS AND LAND USE DECISIONS IN THE LA AMISTAD BIOSPHERE RESERVE BUFFER ZONE IN COSTA RICA AND PANAMA: IMPLICATIONS FOR EXTENSION AND TRAINING SERVICES FOR BUFFER ZONE FARMERS

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ABSTRACT

This study addressed one of the most pressing challenges extension professionals will face in the 21st century–to provide services to buffer zone farmers that enable them to increase agricultural production while maintaining the biodiversity integral to human survival that exists in protected areas. The purpose of the study was to holistically examine the land use decision-making process and its different environmental impacts in buffer zones by identifying forces, underlying causes, and interactions that influence land use decisions in the La Amistad Biosphere Reserve (LABR) buffer zone in Costa Rica and Panama. The study comprised 53 regional, community, and farm-level participants. A combination of qualitative and quantitative research methods were used. A set of 80 key conditions, the distribution of land among six land use classifications along a conservation–development continuum, a set of 104 land use decision variables and subvariables influential in farmer's decisions to allocate land to particular uses along the continuum, and linkages among the variables and subvariables were identified. Based on the expressed needs of buffer zone farmers, potential integrated conservation and development project (ICDP) management strategies and extension and training services for buffer zone farmers were explored. The study can help providers of extension, technical assistance, and training services to buffer zone farmers to understand, anticipate, and respond to their distinct circumstances and needs in an effort to prevent further human encroachment into protected areas and improve biodiversity through management efforts.

INTRODUCTION

Today, the problem of habitat destruction that threatens the biodiversity upon which human life depends looms larger than ever and brings the complexity and interdependence of human and natural systems into sharp focus. The maintenance and health of resources vital to human existence requires viewing and treating human life and the ecosystem as one integrated system (Costanza et al., 1993). Lovejoy (1991) states "if we can bring about a more integrated approach to living within our ecosystems, we are much more likely to save the fundamental structure of biodiversity" (p. 13). Biodiversity is central to both human and natural systems. Human needs and activities drive demands on finite natural resources, accelerate their diminishment and degradation, and threaten humanity's ability to meet its basic needs (Forester and Machlis, 1996). Because biodiversity is impacted by complex systems driven by human needs, approaches to using, managing, and protecting it will address human and biophysical interactions in a dynamic process. Recognizing that careful use and management of resources impacts biodiversity, sustainable development pursues conservation goals by meeting human needs. It endeavors to make sense of, rather than simplify, the complexity of interactions between systems. Because different land use patterns have different environmental impacts (Collins, 1986), balancing land use between conservation and development in agroecosystems is central to sustainable development. The direct relationship between humans and biodiversity requires focusing on agriculture (Serageldin, personal communication, July 8, 1997), because it is the principal proximate cause of habitat destruction and biodiversity loss (Colchester, 1993; Smith, 1996). The impacts of agriculture on biodiversity makes this relationship clear. Overuse or misuse forces existing land to produce beyond regenerative capability resulting in degraded land. Degraded land causes farmers to seek more productive land in the forest which results in deforestation, habitat destruction, and ultimately biodiversity loss (Figure1).

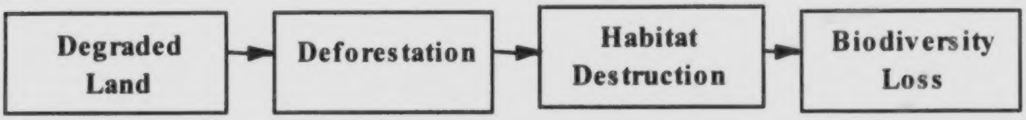

Figure 1. Impacts of Agricultural Production Process on Biodiversity

Agriculture's impact on biodiversity is determined by land use patterns that result from decisions that are responses to a set of real and perceived needs of decision makers which emerge from a larger system of complex forces and their dynamic interactions. Land use decisions depend upon understanding the elements and interactions of individual agroecosystems which requires useful data on human activities in terms of biophysical impacts at the user level (Hildebrand, 1990; Reenberg, 1995). Bringing together socio-economic and biological data can indicate management options for conservation and development (Schelhas, 1992). Biosphere reserves are areas set aside to protect biodiversity. Buffer zones, as interfaces between natural and human systems, provide an ideal environment for studying land use patterns and decisions and their impacts on biodiversity. ICDPs are institutional efforts to provide benefits to adjacent communities so residents do not seek products inside reserves (MacKinnon et al., 1986). The La Amistad Conservation and Development Initiative (AMISCONDE), is an ICDP located in the LABR buffer zone in Costa Rica and Panama.

PURPOSE AND OBJECTIVES

The study's purpose was to holistically examine the land use decision making process in buffer zones by investigating the LABR buffer zone in Costa Rica and Panama and make inferences about potential ICDP management strategies and extension and training services. The objectives were to: (1) determine buffer zone conditions; (2) determine buffer zone land use along a conservation–development continuum; (3) identify a set of variables and subvariables that impact buffer zone land use decisions and determine and represent the linkages among them, and (4) explore potential buffer zone ICDP management strategies and extension and training services (Figure 2).

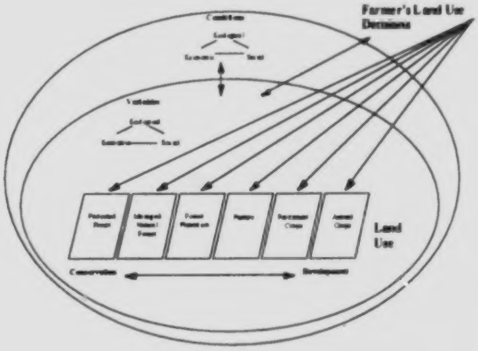

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Figure 2. Conceptual Model of the Land Use Decision Process in the LABR Buffer Zone

METHODS

This study required the conceptual understanding of complex processes and full descriptions of the subjective perceptions, opinions, and experiences of study participants. Therefore, a combination qualitative and quantitative research design was chosen. The population from which the purposive sample was chosen was all individuals affected by and affecting the LABR buffer zone and the AMISCONDE project in both Costa Rica and Panama. Fifty-three participants at the regional, community, and farm levels were selected and triangulated by data source and data collection methods and included buffer zone residents, institutional representatives, and AMISCONDE project staff members. The primary methods of data collection were document review, individual in-depth interviews, and participant-observation. Qualitative data were analyzed inductively using content analysis, descriptive, and explanatory methods, searching for meaning in the experiences of the participants. The classification and coding system by which all data was organized was divided into the three themes of ecological, economic, and social, 14 classifications, and 104 subclassifications. Qualitative data was then quantified. All data were collected in the fall of 1997.

FINDINGS

Study results included: (1) key buffer zone conditions, (2) farm level land use distribution by land use classification; (3) top-ranked land use decision variables and subvariables and linkages among them by land use classification; and (4) potential buffer zone ICDP management strategies and extension and training services.

Conditions in the LABR Buffer Zone

A set of 80 key conditions existing in the LABR buffer zone was identified (Table 1).

Table 1. Key Conditions Characterizing the LABR Buffer Zone Study Area

Ecological	Economic	Social
Land and Production	**Market**	**Personal**
Broken topography	Secure for predominant crop	Risk averse, Increasing family size
Steep slopes	Increasing competition	Religious/political homogeneity*
Non-mechanizable land	Use of intermediaries	**Tradition and Culture**
Fragile & degraded forest soil	Distant market location	Tradition of agriculture
High input use	Seasonal demand fluctuations	Produce traditional crop
Market-oriented production	**Price**	Diversified production
Limited crop alternatives	Price instability	Individualism, Influenced by others
Many small farms*	Price seasonality	Land inheritance, Fatalism,
Limited available land	Price declines from competition	Paternalism, Machismo, Consumerism
Uneven sun exposure	**Costs**	Consumption of production*
Intensive land use	Rising production costs	Separate production function
Limited irrigation	Rising living costs	**Knowledge and Experience**
Difficult access	Permits & fines	Limited formal education
Low production yields	Conservation practices	Limited crop & market knowledge
Climate	**Finance**	Limited crop & market experience
Variable climate	Limited financial resources	Limited information & assistance
Extreme temperatures	Limited credit access	**Policy**
High altitude	High interest rates	Restricted resource use laws
Erratic precipitation patterns	High personal debt levels	Uneven law enforcement
High humidity	Limited collateral	Prevalent corruption
Seasonal high winds	Incentives & subsidies	Government support of agriculture*

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Conservation
Need for conservation practices
Not completely organic production
Contamination
Emerging conservation conscience

Income
Limited total income
Limited alternatives for income
Need for year-round income
Increased need for cash
Lowering agricultural profits

Restrictive land titling
Employment and Labor
Limited employment opportunities
Use of family labor, Labor shortage*
Seasonal wage migration*
Lack of skilled labor
Infrastructure
Poor physical and social infrastructure
Limited institutional activity
Infrastructure support of particular crop*

*Costa Rica only

Land Use in the LABR Buffer Zone

To understand the land use decision-making process in the LABR buffer zone, six land use classifications that comprise a conservation-development continuum were used. The left side of the continuum represents conservation land uses and is comprised of the three forest classifications of protected forest, managed natural forest, and forest plantation. The right side of the continuum represents development land uses and is comprised of the three agricultural classifications of pasture, permanent crops, and annual crops. It was found that the study area comprised 723 hectares, 17% of which were in Costa Rica and 83% of which were in Panama. Across all land use classifications in the entire study area, the greatest proportion, (50%), were in pasture. There were 22% in protected forest, 15% in permanent crops, 10% in annual crops, and 2% in managed natural forest. The fewest number (1%) were in forest plantation. Differences in land use distributions between countries did exist. The most notable differences were that in Costa Rica, the greatest proportion (30%), were in permanent crops and the next greatest (29%), were in pasture. While in Panama, the greatest proportion (54%), were in pasture and the next greatest (24%), were in protected forest. In both countries, the smallest proportion of total hectares were in the forest plantation and managed natural forest land use classifications. Seventy-five percent of the total hectares in the study area were distributed among the three development land uses classifications. Twenty-five percent were distributed among the three conservation land uses. Distribution of hectares among the land use classifications in the buffer zone suggests that an imbalance between conservation and development land uses exists.

Land Use Decision Variables, Subvariables, and Linkages

It was found that particular variables, subvariables, and linkages among them influence land use decisions along the conservation-development continuum. Combined Costa Rican and Panamanian percentages of farm-level participants with land in particular classifications, top ranked variables and subvariables influencing decisions to dedicate land to each of the land use classifications in rank order, and linkages made through subvariables and explained by participant narrative summaries are presented (Table 2).

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Table 2 Top Ranked Land Use Decision Variables, Subvariables, and Linkages

Land use Class.	Variables	Subvariables	Linkages
Protected forest	Conservation Personal Land & production Costs Finance Income Knowledge & Experience Policy	Resource quality Aesthetics Conservation practices Desire Consumption	Protected forest improves resource quality through habitat preservation and soil and water conservation. Preserving mountains, using land in the future, consuming forest products, using forest for recreation, and enhancing farm aesthetics are desirable.
Managed Natural Forest	Conservation Finance Personal Land & Production Costs	Resource quality Financial resources Reserve Production costs Desire	Resource quality requires soil and water conservation and improvement and reserving land in fallow for future agricultural use. The amount of and access to financial resources, higher production costs, and lower fertility inhibit the ability to plant all managed natural forest land and use it as desired.
Forest Plantation	Conservation Income Market Tradition & culture Personal Knowledge & Experience	Resource quality Sales contract Income diversification Tradition Income generation Market existence Consumption Knowledge	Resource quality requires soil and water conservation and improvement that planting trees provides. Trees diversify coffee income. Market existence and income generation are anticipated from sales contracts. It is tradition to diversify crops and produce and consume oranges and wood. Knowledge of orange production is necessary.
Pasture	Personal Land & production Income Conservation Costs Tradition & culture	Desire Land use Consumption Cost savings Animal maintenance	The desire to have cattle is personal. Past land use prohibits uses other than pasture. Pasture maintains land in use for more financially efficient agricultural purposes in the future. Land already in pasture, consumption of cattle products, and not planting a crop are cost savings. Animals are maintained for consumption, transport, and commercial uses.
Permanent	Income Personal Land & production Market Tradition & culture	Land suitability Resource quality Market existence Living standard Land use Income generation Market security Current price	Land is suitable for coffee. Coffee is a soil conservation measure that enhances resource quality. The existence of a market, the security of the market, and high current prices make coffee the easiest crop available to optimize land use and generate income to meet and raise living standards.
Annual	Land & production Costs Income Personal Market	Consumption Resource quality Production costs Cost savings Market existence Current price	Costs are saved by consuming ones own produce. Vegetables impact and are impacted by resource quality. Resource quality improves and production costs are saved with organic production. A market for vegetables exists with good current prices.

It was found that certain variables and subvariables that influence land use decisions along the conservation-development continuum were more important than others in farmer's land use decision-making processes including production costs, financial resources, market existence, current price, and knowledge. There was a tendency for specific types of variables and subvariables to be mentioned on either end of the continuum. Ecological variables and subvariables were most influential in farmers' decisions to allocate land to conservation uses. Economic and social variables and subvariables were most influential in farmers' decisions to allocate land to development uses. There was also a tendency across the continuum for influential variables and subvariables to be social and economic in nature. Ecological variables and subvariables were the least influential. All three types of variables and subvariables were mentioned for land use decisions overall and in each of the land use classifications underscoring the interrelatedness of ecological, economic, and social factors in the land use decision-making process. Linkages that influence land use decisions along the continuum were complex and their precise directions, magnitudes, and correlational relationships are not known.

Buffer Zone ICDP Management Strategies and Extension and Training Services

Buffer zone farmers needs indicated potential management strategies and extension and training services. In general, ICDP management strategies and extension and training services should facilitating the acquisition of resources to enable buffer zone farmers to achieve adequate livelihoods without entering core areas of protected areas in pursuit of additional agricultural land. Buffer zone farmers needs and potential ICDP management strategies and extension and training services fell into seven categories: (1) policy, (2) marketing, (3) technology, (4) training, (5) financial, (6) collaboration, and (7) research. For each category, needs and potential ICDP management strategies and extension and training services to meet those needs are listed.

Policy needs included an equitable land title law, lengthening or repealing the existing fallow land law, less restrictive land use and ecological laws, even law enforcement, higher ecological crimes fines, and more severe penalties, more projectionist trade agreements, more and higher government incentives and subsidies, lower taxes, more government infrastructure support, more abundant, increased, and more expedient payments for land purchased for park, a clearly defined buffer zone, locally available and subsidized permits for use of restricted land, government support of agricultural sector, an adjustment in wage levels, and an improvement in the quality of formal education. ICDP management strategies and extension and training services included assisting farmers to organize for the purposes of effecting needed policy changes, make sense of the laws that impact them, develop suitable mechanisms to deal with the laws that exists, formulate workable alternatives to the laws based on their intimate knowledge of the situation, and bring their needs and alternatives to meet those needs to law makers at every level in an attempt to change laws so that conservation is met through farmers well-being not disregarding it. Buffer zone farmers need to share their situation and solutions with policy makers thereby educating them to promote understanding of the rural farm sector's importance to the nation's long-run ecological, economic, and social goals and to lobby for laws that enable farmers to make livelihoods consistent with protected area laws.

Marketing needs included competitive production, direct sales, and market development. Because buffer zone farmers are faced with an increasingly competitive environment, they require significant assistance in the area of marketing. ICDP management strategies and extension and training services included assisting farmers to access technical and financial assistance for more efficient and diversified production, access technical and financial assistance for training and capital acquisitions, and identify and develop secure markets. Technology needs included lowering costs and increasing productivity, local agroindustrialization, information access and exposure, better quality and locally produced seeds, irrigation and water catchment systems, hot house, tested crop alternatives, and a shift to organize agriculture. Rural areas are technologically disadvantaged which negatively impacts the natural resource base. ICDP management strategies and extension and training services included assisting farmers to produce more efficiently, obtain financial capital for the establishment of local agroindustry and investments that allow the access of technical information, obtain the knowledge to access, test, and use appropriate technologies, and obtain technical and financial assistance to enable a shift to organic production.

Training needs included farm management, conservation practices, basic marketing concepts and practices, micro-enterprise development and management, environmental education balanced between conservation and development, basic economic principles, park and resource use laws, free trade principles and mechanics, group process, computer use, financial management and fundraising, and assistance to obtain higher education. Farmers require appropriate training to build local human capacity to manage the natural resource base more effectively. ICDP management strategies and extension and training services included assisting farmers to determine training needs, access appropriate training resources to meet those needs, fund training activities, and develop appropriate training methods and materials, train local trainers, and build local capacity to continue ICDP efforts after project close. Financial needs included credit with reasonable terms, even and predictable income streams, production collateral, warehouse facilities, sources of local employment, disposable income or cash, financial resources to maintain land ownership, funds to enable transition to organic agriculture, lower cost agricultural inputs, incentives and subsidies for conservation practices, inputs, and prices, funds for large-scale group enterprises and to purchase capital items, fundraising, loans for conservation practices, and a supply of fairly priced labor. Farmers require financial resources that enable them to achieve profitability, conserve land, and develop alternatives to production agriculture. ICDP management strategies and extension and training services included assisting farmers to establish local credit mechanisms, unite to solicit credit, access funds to develop productive infrastructure, establish local employment sources, diversify and stabilize incomes, and raise funds to purchase park land, establish alternative productive activities, and to fund conservation practices.

Collaboration needs included publicizing buffer zone farmers' role as protectors of resources, building collaborative alliances, and coordinating production and marketing activities. To effectively protect humanity's resources, buffer zone farmers need the support that can come from collaboration. ICDP management strategies and extension and training services included assisting farmers to publicize, collaborate, and unify. Research needs included research on buffer zones, use of holistic approaches and tools, alternative crop experiments, research and monitoring of ICDPs, acquisition of research funds, and research dissemination. To meet conservation and development objectives, research about buffer zones and ICDPs is necessary. ICDP management strategies and extension and training services included assisting farmers to encourage buffer zone research efforts, develop mechanisms to research and monitor ICDPs using appropriate tools, develop effective experimentation capabilities, acquire research funds, and disseminate research findings.

In summary, it was found that ICDP management strategies and extension and training services in the LABR should provide a combination of services specifically designed to meet the expressed needs of buffer zone farmers and empower them to mobilize resources to help them to: (1) access land resources with use restrictions and policy advocacy, (2) either compete on a more even playing field with large producers and importers or have competitive advantages in alternative productive pursuits and to sell more directly, (3) establish technological improvements, (4) build local human capacity, (5) obtain productive capital, (6) build collaborative relationships, and (7) research buffer zones, alternative productive activities, and ICDPs to determine the most effective management strategies and extension and training services.

CONCLUSIONS

In conclusion, buffer zone conditions, land uses, land use decision variables and subvariables, linkages among them, and buffer zone farmers needs and potential ICDP management strategies and extension and training services to meet the needs identified in this study can help ICDP managers and extension and training service providers to holistically understand the realities of buffer zone farmers. This understanding can help them develop appropriate programs and services that provide buffer zone farmers with the means to achieve financial security and, as a by-product, meet conservation ends. The process of identifying conditions and underlying influences of land use changes in buffer zones can result in policies, programs, projects, and services that shift the conservation–development balance through management interventions and result in the maintenance and improvement of biodiversity.

REFERENCES

Collins, J. (1986). Smallholder settlement of tropical South America: The social causes of ecological destruction. Human Organization, 45, (1), 1-10.

Colchester, M. (1993). Colonizing the rainforests: The agents and causes of deforestation. In Colchester, M. & Lohmann, L. (Eds.). The struggle for land and the fate of the forests. (pp. 1-15). London: Zed Books.

Costanza, R., Wainger, L., Folke, C., & Maler, K. (1993). Modeling complex ecological economic systems towards an evolutionary, dynamic understanding of people and nature. BioScience, 43 (8), 545-555.

Forester, D. & Machlis, G. (1996). Modeling human factors that affect the loss of biodiversity. Conservation Biology, 10 (4), 1253-1263.

Hildebrand, P.E. (1990). Farming systems research-extension. In Jones, J. & Street, P. (Eds.), Systems theory applied to agriculture and the food chain (pp. 131-143). New York: Elsevier Science Publishers Ltd.

Lovejoy, T. (1991). Biodiversity: what is it? In Hudson W. (Ed.) Landscape linkages and biodiversity. (pp 7-13). Washington, DC: Defenders of Wildlife.

MacKinnon, J., MacKinnon, K., Child, G., & Thorsell, J. (1986). Managing protected areas in the tropics, Gland, Switzerland: IUCN.

Reenberg, A. (1995). The spatial pattern and dynamics of a Sahelian agro-ecosystem land use systems analysis combining household survey with georelated information. GeoJournal, 37, (4), 489-499.

Schelhas, J. (1992). Socio-economic and biological analysis for buffer zone establishment. science and the management of protected areas. In Willison. J, Bondrup-Nielsen, S., Drysdale, C., Herman, T., & Munro, N. (Eds.). Amsterdam: Elsevier.

Smith, N. J. H. (1996). Effects of land use systems on the use and conservation of biodiversity. In Biodiversity and Agricultural Intensification Partners for Conservation and Development. ESD Studies and Monographs Series No. 11, Washington, DC: The World Bank.

Session K Program Strategies

March 23, 1:00 - 3:00 p. m.

Session Chair - Bill Thuemmel

Location: Laventille Room

TITLE: Key Issues in Agricultural Extension in Swaziland: Future Considerations
AUTHOR: Barnabas M. Dlamini, Musa M.A. Dube
University of Swaziland
DISCUSSANT: Gary Leske

TITLE: The 4-H Cooperative Curriculum System: Pooling Scarce Resources for Nonformal Education
AUTHOR: Arlen Etling
University of Nebraska
DISCUSSANT: Gary Leske

TITLE: Dancing to a New Tune: Gender & Agricultural Development
AUTHOR: Julie A. Tritz, David G. Acker
Iowa State University
DISCUSSANT: Katherine L. Cason

TITLE: The Transition From Welfare to Work: Strategies and Implications for Extension Education
AUTHOR: Marilyn Corbin
Pennsylvania State University
DISCUSSANT: Katherine L. Cason

Key Issues in Agricultural Extension in Swaziland: Future Considerations

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Abstract

This paper describes the development of agricultural extension in Swaziland with regard to policies, role, organisation, programming, research, effectiveness, funding, communication and harmonizing Government white papers and consultancy reports. The paper shows that over many decades, agricultural extension has undergone changes that brought about improvements in agriculture. However, there are areas that need greater improvement for effective and sustained development in agricultural extension in Swaziland.

Introduction

Agricultural Extension (AE) has become a subject of much debate and criticism among many stakeholders, particularly in terms of its role (Nzondo, 1995); lack of a formal and clear policy and perception of AE as simply technology transfer and maximization of production (FAO, 1989). Further, if resources continue to be limited to national AE in many developing countries, AE will remain stagnant (Adhikarya, 1994). Throughout Africa, AE is alleged to be at "crossroads" and gradually declining. Schuchadt & Cunningham(1987) found that Africa's AE systems are experiencing turbulent episodes. Resources are gradually diminishing, that is, both material and human resources, yet AE is still expected to reach a large number of farmers including women, youth, and landless labourers (Axinn, 1988).

Purpose and objectives

The purpose of the paper was to analyse the key issues in Agricultural Extension in Swaziland based on research reports, Government white papers, consultancy reports and literature review and propose future considerations. Specifically, the paper describe key issues in Agricultural Extension in Swaziland and forward recommendations for future consideration which if adopted will improve the present status of AE in Swaziland.

Methodology

The paper was mainly desk research and supplemented by experiences of the writers who are involved, in various activities of extension work and train preservice extension officers for the AE system in Swaziland. Available contemporary research reports, Government white papers and consultancy reports were reviewed. Also, literature on AE from other countries especially developed countries was used. The analysis in this paper used "Reframing Approach" as a systematic mode to organizational analysis (Bolman & Deal, 1991). Reframing an organization refers to drawing schemata, maps, images, and metaphors of an organization in order to make it more efficient and effective in achieving its organizational goal. Reframing provides windows on the world and lenses that bring the world into focus. These windows filter out some things and allow others to pass through easily. Also, the four phases in reframing (structural, human resource, political and symbolic) provide a pluralistic view of an organization and contain ingredients that are essential to an interactive organization like AE.

Results and Conclusions

History

Agricultural extension service was first organized in the 1930's and has progressed from a colonial, British dominated system to a localized extension service staffed mostly by native Swazis (Trail, 1985). Immediately after obtaining independence in 1968, the Swaziland Government obtained funding from the World Bank, the United States Agency for International Development (USAID), and the United Kingdom to reorganise the AE Service. The AE, before independence was predominantly serving the needs of white colonial masters, growing cash crops and raising animals for the commercial sector. Thus, the donor funding at independence assisted the government to organize portions of Swaziland into Rural Development Areas (RDA's) but still the RDA's were patterned to the European style of agricultural extension, which was a commodity based and manned by highly specialized officers. The rural Swazi farmer needed technical assistance from a generalist type of extension officer since he was beset with multiple farming problems. The government continued, over the years, to observe problems with the AE system with regard to limited accessibility of extension field officers to the small native farmer. A reorganisation of AE was initiated and resulted to the introduction of the Training and Visit(T &V) Extension System in 1985 (Diamond, 1994). The T & V system was designed so that extension officers could quickly disseminate specific agricultural practices and recommendations to farmers through frequent visits to their farms. The system, also, required field officers who were specialists to become generalists by requiring each extension field officer to participate in a twelve-week, in service education program. Two years later, the T & V system was found to lack research-based information or appropriate technology to be imparted to farmers. Thus, the T&V system lost credibility and relevance, inadequate planning, poor communication, untimely delivery of extension messages, lack of basic resources to implement the system, and poor transportation system that hindered extension officers to attend meetings and visit homesteads timely. Further, the system was "rigid and did not allow flexibility for field officers to develop specific extension education programs based on the perceived needs of farmers" (Diamond, 1994), politicized by local leaders, brought confusion as extension field officers were unclear about their specific roles and responsibilities and how the system was to function. Thus, the T & V system was modified in 1989 with funding assistance from USAID through the Swaziland Cropping System Research and Extension Training Project (CSRET) coordinated by the Pennsylvania and Tennessee States Universities. However, the AE system is presently at cross roads, seeking direction to the next phase of its development. AE is at cross roads because of many issues, some of which have been systematically verified and documented.

Key issues in Agricultural extension in Swaziland

In Swaziland, efforts have been expended to improve AE as evidenced in the Post Independence Development Plan (1969). Some of the interventions include: handing over report (Maina, 1977); a review of the Rural Development Area Programme (The Hunting Technical Services, 1983); proposed structure and training needs of personnel (Twala et. al, 1984); a review of the Agricultural Extension System (Trail, 1985); identification of professional competencies needed by agricultural extension officers (Easter, 1985); identification of problems encountered in

Agricultural Extension (Msitsini, 1987); evaluation of the Training and Visit System (Malaza et. al, 1987); forecast of Swaziland Agricultural Extension's future (Diamond, 1992); identification of perceptions of field officers, extension officers, and farmers regarding agricultural extension education in Swaziland (Dube, 1993); and identification of strategic issues in Swaziland's agricultural development (Government of Swaziland and United Nation Development Programme, 1994). There is little evidence to suggest that AE in Swaziland has changed significantly as a result of all these interventions. In this regard, it becomes necessary to systematically examine the key issues in Agricultural Extension in Swaziland in order to forward suggestions which if implemented could improve the status of AE significantly.

The key issues that are related to AE include Policy Framework for the AE system. Ever since independence in 1968, the overall government policy in the agricultural sector has been to enhance the quality of rural well-being as well as assisting Swazi Nation Land (SNL) farmers make a transition from subsistence to commercial farming (Lukhele, 1994). While the policy is broad based on paper, in reality no assistance has been given to commercial farmers. Also, government funding for AE and research does not indicate commitment to this policy. There are weak linkages between extension, research, training and non-government organisations (NGOs) which result to duplication of efforts and irrelevant preservice training. The poor coordination and weak linkages tend to be costly for the country. Also, NGO activities are transient and end up leaving their projects with the government AE officers who were initially bypassed when these activities were introduced. The ratio of extension officers to farmers (about 1:250-300) is too wide with poor support system, such as communication (transportation, a phone and E-mail)and poor terms and conditions of service (low salary, poor maintained houses, no water, toilet or electricity) for extension officers. Research suffers from poor funding and inadequate manpower to address research issues. Lack of coherent government policy to bring together the Title Deed Land (TDL) and Swazi Nation Land (SNL) has resulted to SNL farmers being underdeveloped and making less impact to economic development. The TDL farmers on the other hand are advanced and making money in agriculture and contribute to export earning for the country. The annual planning process for a regional and national AE program no longer includes people at the local level to have major input in the program planning process. This results to a top-down approach as opposed to a bottom-up extension programme.

A number of government white papers and consultancy reports are in the shelves of government offices, have not been taken seriously by government for implementation so that stakeholders benefit from the recommendations. Also, the AE in Swaziland is faced with a number of **constraints:** low returns to labour from farming in comparison to off-farm employment; unpredictability of weather; poor management of land resources; limited accessibility of credit for inputs; inadequate utilization of water resources; shortage of resources for extension services in terms of staff, transport, incentives and communication; poor marketing infrastructures; lack of enforcement of conservation legislation; and a poor rural mechanization program that could help farmers have access to tractor hire services in a timely and efficient manner(Dube & Dlamini, 1994). The overall government strategy to rural development is ineffective in terms of well-planned programs for: communication, forestry, electrification, water, and rural settlement that would bring about meaningful implementation of agricultural extension programs and socioeconomic and political wellbeing of the rural people. This results to negative perceptions of the extension system by stakeholders. One of the means of increasing AE programmes is through the application of improved and innovative extension methods, and experiences show that any AE system must be strategically planned, needs-based, participatory and problems oriented (Adhikarya, 1995). It is through these systematic, interactive and holistic approaches that the agricultural extension system could be improved.

Achievements of the AE system

The AE system has made plausible achievements, over the years, that are bases for future developments. The popular radio programs broadcast on agriculture are listened to by many Swazis in rural areas for extension advice and is the most effective way of communicating agricultural information to farmers. The average farmer watches television documentaries on agriculture and read print media and magazines on agriculture. The ratio of an extension agent to a farmer has improved over the years. The use of fertilizers, hybrid varieties and livestock crossbreeds to upgrade the local "Nguni" cattle and culling of unproductive animals, are all results of extension teaching programs. Yields have increased on Swazi nation land over the years and this has resulted to better nutrition as food had become available to most Swazis. The formation of groups, such, as cooperatives and Farmers' associations are now part of the culture of people in the rural areas not only for agriculture related activities but for other socioeconomic activities as well. For an example, there are many women groups involved in broiler production and vegetable production for sale in rural and urban areas. Growing of vegetables and fruit trees are now popular compared to the past decade due to AE teaching programs. The Ministry of Agriculture and Cooperatives has improved its planning for AE and this has improved coordination within the Ministry. Control and prevention of pests and diseases are accepted by Swazi farmers, though, application of these practices is limited by economic factors. For an example, dipping cattle for prevention and control of diseases, parasites and other pests are accepted by farmers but are unable to pay full costs for these dipping chemicals. Though not fully accepted by farmers, grazing areas are organised into "group ranches" or block grazing areas which are fenced off and have identifiable stock owners are important development as they enable farmers to control cattle from trespassing on their fields.

The 4S project clubs for youth are active in Swaziland. The 4S stands for Sive Seswatini-Siyasebenta-Siyathuthuka-Sihlangane, and these are translated into English to mean: Swaziland-Working -Developing-United. These clubs have an important part to play in the development of the country. The members learn how to take responsibility, gaining knowledge and skills, acquiring principles of leadership and learning how to cooperate and serve others.

Also, the use of contours as a means for controlling soil erosion has been very successful in Swaziland. The contours were first organized in the 1950's and are still effectively being used by the majority of farmers in the country to prevent soil erosion in agricultural fields.

Recommendations

Based on the analysis of the history of AE in Swaziland, various interventions to improve AE and literature review, the following proposals can be made for future considerations:

1. **Philosophy**

   There is a need to establish a clearer philosophy of Agricultural Extension in Swaziland. A philosophy is needed to guide the overall management of AE in Swaziland. Literature points out that the absence of a philosophy to guide the operation of AE in Swaziland may result to the AE system being less effective and efficient (Trail, 1985 & Dube, 1993).

2. **Organizational Structure**

A well defined, organizational structure is needed to improve the efficiency and effectiveness of AE in Swaziland. Nearly all the reviewers (both local and outside reviewers) of AE in Swaziland (Trail, 1985 & Diamond, 1993) have pointed out that AE requires a better organizational structure that could encourage autonomy but accountable and more responsive system of AE. A research program to inquire into the feasibility of a semi-autonomous AE system is hereby proposed.

3. **Human Resources Development**

Improvement of the human resources in terms of professional qualifications of AE staff is necessary. At least a bachelor's degree should be the minimum qualification to work as an agent in the AE system. Dube (1993) reported that the professional qualification of front line extension workers in Swaziland was very low compared to other countries. Even though professional qualification does not translate into excellence, better qualified officers should be better equipped to man/manage AE in Swaziland. It is recommended that training of extension staff as part of a staff appraisal could be conducted through in service training. Also, a training plan has to be developed so that the staff development programme is put in place.

4. **Funding**

There is a need to improve funding for agricultural extension education. Mechanisms are to be devised that would assist to find money that addresses farmers' needs. Cost sharing and other schemes need to be considered as alternative source of funding AE activities in Swaziland. Related to funding is availability of credit facilities for farmers. Credit facilities or subsidies is a valuable need for farmers and must be made available.

5. **Re-Orientation of AE in Swaziland**

There is a need to reorient AE in Swaziland so that its mission and objectives are clearly defined. Once the mission and objectives are clearly defined, perhaps, Agricultural Extension (AE) can become an inductive process than a "service" or purely a "technology delivery". Dube (1993) postulates that AE in Swaziland should move away from being "regulatory" to education process.

6. **Choice of Methodology(ies)**

There is a need to choose appropriate and suitable Agricultural Extension Teaching Methods to be used when teaching farmers. Unlike in the formal education type of system, farmers learn more effectively when suitable extension teaching methods are used. In this regard, alternative methods and approaches should be sought and used (Axinn, 1972) in order to ensure that effective teaching and learning of farmers take place in AE.

7. **Establishment and strengthening of Linkages**
There is a need for AE in Swaziland to establish a collaborative linkage with all key stakeholders in Agricultural Development. The Ministry of Agriculture and Cooperatives (MOAC) alone cannot spearhead AE in Swaziland. A close working relationship with the University of Swaziland, particularly, the Faculty of Agriculture, Research institutes, schools involved in the teaching of agriculture, Non Governmental Organizations (NGO's) and agricultural industries are recommended. Prospects between small producers and the large commercial agro-based businesses, such as, Dairy Board, Ngwane Mills, Swaziland Meat Industry and Swaziland Sugar Association, to ensure mutual benefit between the SNL and TDL and to encourage subcontracting to small business persons including those residing on SNL.

8. **Participation and Involvement of Farmers**
There is a need to consider the value in encouraging farmer participation and involvement in all Agricultural Extension activities. Participation and involvement of a clientele are a necessity for AE programs to succeed.

9. **Incentives for AE Officers**
There is a need to establish incentive package for AE officers. An incentive package could include the overall terms and conditions of services, promotions and special awards to outstanding performance in AE.

10. **Commercialization of SNL**
There is a need to grow cash and high value crops for sale not only in the region but internationally, such as, sugar. Also, given the susceptibility of the country to droughts, provision of dams and irrigation facilities should be encouraged. The extension agent should be trained to realise that farming is a business. There is an urgent need to ensure extension agents are trained in farming system approach, including farm management and marketing extension.

11. **Food Security**
Food security at national and household levels is said to exist when all members have adequate access to sufficient and nutritious quantities of food to ensure that they leave healthy and productive lives. They are needs for food security strategies; encouragement of food management, processing and storage techniques, barter methods to enable the exchange of food items where limited income exists, diversification and cost-effective methods of food production in order to meet both household consumption and production for the market; education for the public on food nutrition and healthy eating habits to ensure a balanced diet for each member of the household; identification of regional markets and encouragement of trade among producers in the region. In the final analysis trade should be the engine for fostering food security.

12. **Land ownership**
There is a need for the development of land use and allocation policy with a view to ensuring that both men and women have equal access and ownership opportunities, especially, on SNL. This will create a balance in ownership of property and alleviate the

current dependency of women on their spouses/sons and other male relatives for land ownership and farm operations.

13. **Supervision**

There is a need to ensure that an efficient supervisory system is put in place for the front line AE officers. Poor supervision of AE officers has resulted to hard working officers to be less effective. Yet, effective supervision is likely to promote efficiency and self-evaluation.

14. **Evaluation**

There is a need for an evaluation program in place in order to insure that every effort expended in AE, is measured in terms of worthiness or lack of worthiness. Such information is needed in order to determine the impact of AE to the lives of the Swazi people. At the same time, weaknesses are necessary in order to seek for alternative approaches in improving an AE program.

Educational importance

The paper shows that efforts over a period of many decades have brought about improved agricultural production that resulted in improved living standards for the people of Swaziland. Also, the paper indicates that to efficiently use research reports, Government white papers and consultancy reports, effort should be expended to systematically summarise and harmonise these documents so that recommendations forwarded are practical and implementable. Fragmented research reports, Government white papers and consultancy reports are of no use unless they are harmonised. Also, identification of key issues in Agricultural Extension could serve as a baseline approach to improving AE in Swaziland. Strong linkages by AE with research institutions, universities, NGOs, private and governmental agencies as well as involving local people in the total extension program for a country is fundamental for agricultural development to be realised.

Reference

Adhikarya, R. (1994). Strategic extensions campaign: A participatory-oriented method of agricultural extension. Rome, Italy.

Axinn, G.H. (1988). Guide on alternative extension approaches. FAO: Rome,Italy.

Bolman, L.G. and Deal, T.E. (1991). Reframing organizations: Artistry, choice, and leadership. Jossey-Bay Inc. Publishers:San Francisco, California.

Diamond, J.E. (1992). Agricultural extension in Swaziland: An evolution. Conference proceedings of the symposium for research in agricultural and extension education. Agricultural and Extension Education: Preparing for the 21st Century. Columbus, Ohio.

Diamond, J.E. (1994). Agricultural extension in Swaziland: An evolution. Journal of International Agricultural and Extension Education, 1(1), 71-77.

Dube, M. A & Dlamini, B.M.(1994). Farmers' perceptions of the tractor hire service at the rural development areas in Swaziland. UNISWA Journal of Agriculture, 3, 111-119.

Dube, M.M.A. (1993). Perceptions of field officers, extension officers, and farmers regarding agricultural extension education in Swaziland. PhD Dissertation, Ames, Iowa.

Easter, G.W. (1985). Assessment of professional competencies needed by extension agents in developing countries: Case study of Swaziland. PhD Dissertation, The Pennsylvania State University, College Park, Pennsylvania.

Government of Swaziland and UNDP (1994). Draft:Strategic issues in Swaziland's agricultural development: A study contributing to the preparation of the National Development Strategy. Food studies group, International Development Centre, Oxford.

Maina, M.N. (1977, June). Handing over a report. Distribution restricted. Departments of Agriculture: Mbabane, Swaziland.

Malaza, M. et al (1987). Evaluation of the training and visit extension system in Swaziland. Ministry of Agriculture and Cooperatives, Mbabane, Swaziland.

Msitsini, H. (1987). Some major problems encountered by agricultural extension agents in the field. Bsc Thesis, University of Swaziland: Luyengo, Swaziland.

Nzondo, M. (1995). Agricultural extension in Central Africa:An introductory presentation of the main Problems of Agricultural extension in Africa. Proceedings of an international workshop on Agricultural Extension. Yaounde, Cameroon.

Post Independence Development Plan (1969). Government of Swaziland: Mbabane, Swaziland.

Schuchardt, J. and Cunningham, C. (1987, Spring). Extension's crossroads in turbulent time: Downsizing or downgrading? Journal of extension. Vol.xxv, pp 4-6.

The Hunting Technical Services (1983). Review of the Rural Development Area Programme. Mbabane, Swaziland.

Trail, T.F. (1985). Recommendations for a strengthened extension programme in Swaziland. Mbabane, Swaziland.

Twala, R. et al (1984). A proposal for the structure of the agricultural extension service and its training needs for the phase III of the rural development areas programme in Swaziland. Ministry of Agriculture and Cooperatives:Mbabane, Swaziland.

The 4-H Cooperative Curriculum System:
Pooling Scarce Resources for Nonformal Education

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Abstract This paper is a case study of the 4-H Cooperative Curriculum System (4HCCS). Beginning in 1990, this group has evolved into a 32-state collaboration to pool expertise and physical resources in order to develop high quality youth curricula at the lowest cost possible to member states. Factors in its success and unresolved problems are discussed. The 4HCCS model has implications for other countries.

Introduction Providing current, attractive curricula is a constant challenge for nonformal educational groups. Written curricula tend to be expensive and their production is time consuming. The "cafeteria curriculum" which is a feature of nonformal education (Brembeck, 1973; Coombs, 1974; Etling, 1993) requires frequent revision and updating. A small organization often finds this task to be daunting.

This was the case with the 4-H organization in the United States. Although supported by considerable talent and resources, 4-H staff found that much of its curriculum, especially in animal science, needed to be updated (Zurcher, 1998). Many state 4-H organizations produced their own curricula in relatively small and, therefore, costly quantities. Smaller states were forced to purchase curricula (members' and leaders' manuals) from larger states. To address this problem, the Cooperative Curriculum System (4HCCS) was organized to allow 4-H curriculum and subject matter specialists in the various states to pool their resources to develop curricula of higher quality and lower cost.

Purpose This case study's purpose was to describe the 4HCCS and its accomplishments. Objectives were to: 1) describe the 4HCCS and its guiding concepts; 2) describe its success in developing new curricula and the reasons for that success; and 3) describe problems yet to be resolved.

Issues

4HCCS Organization - Thirty-two states were members of 4HCCS in 1998. The Board of Directors (for overall policy) for 4HCCS was composed of the state 4-H leaders of the member states. A 4HCCS Coordinator was hired to oversee operations. A Steering Committee, composed of nine state and one federal 4-H curriculum development specialists, was organized to carry out the daily operations and to staff four task forces: 1) curriculum production, 2) staff development, 3) marketing, and 4) evaluation (4HCCS, 1998). Figure 1 shows these roles and responsibilities (ibid).

The 4HCCS Coordinator, Tom Zurcher, has been the driving force that moved

Figure 1. 4HCCS Roles and Responsibilities

BOARD OF DIRECTORS (State 4-H Leaders of the member states)	• Provide policy direction to 4HCCS • Approve Committee membership • Approve budgets and prices • Recruit state membership to 4HCCS • Support and promote 4HCCS
STEERING COMMITTEE Beth Atkins, VA Susan Barkman, IN Sorrel Brown, IDEA Linda Crow, ND Sue Cummings, CO Arlen Etling, NE Ed Gershon, 4-H Council Lisa Lauxman, AZ Ed Maxa, NC, Chair Elect David Mitchell. ID Arlinda Nauman, ID Ann Rund, IL Allan Smith, CSREES Doug Steele, CO Kathi Vos, WI, Chair Tom Zurcher, MN, Coordinator	• Manage the budget and overall process • Determine priority curriculum needs • Initiate Requests for Proposals • Select qualified proposals • Assist design teams to meet National Jury Criteria and 4HCCS guidelines • Review and evaluate drafts • Make available evaluation instruments • See that products produced meet quality standards Contract the highest quality duplication available via bids • See that guidelines are followed • Price products competitively • Keep committee members active
DESIGN TEAMS '97-'98 - Horse, Rabbit, Swine. '97-'99 A Style of Your Own, Citizenship, Small Engines. '98-'00 Computer, Leadership, Financial Management. '98-'99 Dog, Dairy, Beef, Dairy	• Participate in design team training • Develop and produce high quality, high impact products • Pilot/evaluate products developed • Assist in marketing products
FULFILLMENT CENTER (Distribution Center, U. of Minnesota)	• Duplicate and distribute all products supported by 4HCCS • Provide outstanding customer service
4HCCS COORDINATOR Tom Zurcher **4HCCS MARKET AND FUND RAISING COORDINATOR** Judy Rice	• Represent 4HCCS in all matters involving the production and budgets • Support each of the six work teams of the Steering Committee • Provide periodic reports to the Board of Directors

4HCCS from an idea to a reality. His position has changed from that of primarily a state curriculum specialist in 1990 to that of primarily the 4HCCS Coordinator in 1998. 4HCCS revenues have "bought out" most of his state salary so he could concentrate energy in guiding the development of the organization. His leadership has allowed 4HCCS to develop the structure, process, and policies, described in the history section below. As with most innovative ideas, the energy, enthusiasm, and creativity of one individual have been a key to its implementation and expansion.

The Steering Committee has been the group through which the Coordinator worked to accomplish the many tasks necessary for the development of 4HCCS. Working with the Coordinator, the Steering Committee has shaped the vision of 4HCCS and helped develop the structure, process, and policies. The Steering Committee is comprised of Cooperative Extension specialists who are paid by their respective states (or USDA or the National 4-H Council in two cases) but contribute their time to curriculum production, and subsequent staff development, marketing, and evaluation necessary to move new curricula into state and local 4-H programs. This steering committee meets monthly by telephone conference and annually at a central location for several days. Steering committee members serve for three years and elect their own officers.

The executive team of the steering committee is composed of the Steering Committee Chair, the Chair Elect, a recorder, the 4HCCS Coordinator, and a representative from the Board of Directors. This group shapes the agenda for the Steering Committee meetings and facilitates communication among the various internal groups and with external stakeholders.

The Board of Directors, composed of 32 state 4-H leaders, provides oversight on operations and assists in policy development. In the early years of 4HCCS, this group provided limited direction for 4HCCS but, as the 4HCCS vision and mission have expanded and been refined, the Board has taken an increasingly active role.

History - 4HCCS, however, did not start with this level of organization. It evolved from a meeting in 1990 of state and county Cooperative Extension staff, from the North Central Region, who were concerned about 4-H animal science curricula. According to Tom Zurcher, 4HCCS Coordinator (personal communication, October 21, 1998), this group held a planning meeting which resulted in a proposal to State Extension Directors for funds to write 45 animal science activity guides. The proposal was approved in 1991. Twelve design teams began work which led to the publication of a four-piece rabbit curriculum in 1993. Piloting and marketing issues were addressed. In 1994 the group published swine, dairy, dog, cat, and goat curricula.

In 1995 the North Central 4-H Leaders named employees to a "task force" which replaced the original group. Later in the year this task force was named the North Central Regional Curriculum Development Project. Curricula were published for beef, horses, pets, poultry, and sheep.

In 1996 the group expanded its focus beyond animal science topics. Nine grants of $40,000 each were awarded to design teams made up of individuals from multiple states. A training program was organized for the new design teams. The steering committee was first formed by State 4-H Leaders; the University of Minnesota was chosen as the "secondary fulfillment center" to produce and market the new curricula; a web site for 4HCCS was established; a decision was made to accept new states from other regions; and the name was changed to 4HCCS.

In 1997 curricula were published for aerospace, entomology, health, woodworking, electric, workforce preparedness, personal development, and theatre arts. Three new grants were awarded; a business plan was adopted; the board of directors was organized; and a national conference called the "product premier" was organized to market the curricula and provide training to Extension staff and volunteers on their use in local settings.

In 1998 curricula were published in child development, sewing and textiles, and environmental issues. Also published were revisions of the original swine, rabbits, and horse curricula. A marketing coordinator was hired and a 4HCCS coordinator position was created. Three grants were awarded for citizenship, clothing, and small engines curricula as well as grants to revise beef, dairy, cat, and dog curricula. Plans were made to fund design teams for leadership, computers, bicycle, financial management, and revisions for the rest of the animal science curricula. By 1998 thirty-two states had joined 4HCCS paying $22,000 each for membership.

Vision/Mission - 4HCCS believes that "4-H'ers everywhere will benefit from powerful youth development curricula created through nationwide pooling of Cooperative Extension Service human and financial resources." Its mission, therefore, is "to provide high quality experientially-based curriculum products to 4-H and other nonformal national youth development organizations" (4HCCS, 1998).

Purpose - "To establish and maintain a self-funding, nationwide system for the development, production, evaluation, marketing and distribution of 4-H youth development curriculum products that enhance the achievement of important youth development objectives" is the purpose of 4HCCS (ibid).

Basic Philosophy - "Competitively priced, higher quality curricula with greater impact on youth programs nationwide will result from states combining talents and sharing resources and ownership" (ibid).

Guiding Concepts - All states may join CCS by paying a $22,000 membership fee. Anyone may purchase and use the curriculum products produced. An annual nationwide needs assessment of 4-H sets priorities for curricula to be developed, and a request for proposals is issued for each priority. Any state (or group of states) may submit a proposal according to published criteria which encourage participation from other youth organizations, government agencies, and the business community. A winning proposal receives $45,000 to fund a design team which has two years to develop and produce its product. The lead state is encouraged to recruit the most qualified design team members, regardless of their affiliation, and to use the latest technology. Products are reviewed every five years to insure marketability. Revisions to existing curricula will be made to keep them current.

All curriculum products are juried using 14 criteria established by 4-H curriculum specialists through the US Department of Agriculture. One of those criteria, the use of "experiential learning," is appropriate for nonformal education and different from the previous 4-H teacher-centered curricula. Another of the criteria is that curricula focus on developing "life skills" in youth which is different from the subject matter emphasis of previous 4-H curricula.

The curriculum products are marketed nationwide using a colorful brochure. Pre-production orders are used to determine the number of each item that will be printed. Member states may purchase CCS curricula for a 35 percent discount. Revenue generated from sales is returned to 4HCCS to maintain the organization and to revise, develop and produce additional products (ibid).

Results Between 1991 and 1994 an animal science "skills for life" series of 45 separate curriculum pieces was written, piloted, evaluated, produced, and marketed. After 1994, eight new proposals were approved for curricula on aerospace, electricity, entomology, career exploration, woodworking, health, theatre arts and school enrichment. In 1996 seven new proposals were funded; seven were approved in 1997, with seven anticipated for initiation in 1998. Most state 4-H leaders agree that 4HCCS has produced competitively priced, high quality curricula with impacts on youth that are greater than most curricula developed prior to 4HCCS (Gary Heusel, Nebraska State 4-H Leader, personal communication on September 3, 1998).

Recent Accomplishments - In 1997, 27 pieces of eight curricula were completed. All of these curricula were approved by the National Curriculum jury (the approval rate for non-CCS curriculum submitted to the jury is 66 percent (Allan Smith, USDA Program Leader, 4-H and Youth Development, personal communication on September 29, 1998). A second national workshop was organized to train new design teams (previously, this had been done individually). A resource notebook was revised to help guide the Steering Committee as well as design teams. Evaluation instruments were developed and tested. 4HCCS review teams were organized for each curriculum product being developed. Products were marketed via a revised catalog, a national "product premier" conference, and product overview packets sent to every state. The overviews were also added to the 4HCCS worldwide web site.

Reasons for Success - Much of the success of 4HCCS can be attributed to the enthusiasm of the original group, the leadership of Tom Zurcher, and the guiding concepts that evolved over the years. These factors, combined with the existing Cooperative Extension System, helped 4HCCS survive and adapt to new challenges and opportunities.

A program planning process was used that clearly articulated goals at each step of the organization's development. Examples of this planning can be seen in the action plan, the business plan, and the annual calendar (figure 2).

A "Steering Committee Resource Notebook" which is updated each year helps keep the steering committee and the board of directors informed and focused. It also provides orientation information for new steering committee members.

Another notebook for design team coordinators and liaisons helps them to quickly understand their roles and responsibilities and the support they can expect from other

Figure 2. 4HCCS Calendar (Zurcher, 1998).

Monthly - Steering Committee conference call; task force and sub-committee phone conferences; Liaison/Coordinators of design teams conference call.

July - Annual Steering Committee meeting; needs assessment and pre-proposals solicited from states.

August - Pre-proposals due from states; priorities determined for RFP's (request for proposals).

September - Priority, revision, and regular RFP's sent out.

October - Marketing at Regional Leader Forums; Board of Directors meeting; complimentary products packet shipped to states.

December - Grant proposals due; Steering Committee selects grant winners; design team members are recruited from other than grant winner states.

January - Design team workshop I.

February - Revisions solicited for all curricula under review this year.

March - Design team workshop II.

April - Pilot copies and 4 completed pages of new products due to Liaison/Design Coordinator; Board of Directors meeting; Product Premier Conference.

May - Pre-press orders for all products due.

individuals and groups associated with 4HCCS. The design team coordinator is the equivalent of the principal investigator for most grants and the liaison is a member of the steering committee who is assigned to assist the design team coordinator and to keep all members of the design team on schedule.

Volunteer leadership and labor is a hallmark of Cooperative Extension and a reason for the success of 4HCCS. A recognition program helps maintain volunteers' motivation to contribute to 4HCCS.

An attractive catalogue of curricula available helps market 4HCCS products. The product premier conference also helps in marketing and in training nonformal educators to use the curricula.

4HCCS has been greatly aided by the development and operation of a national Curriculum Jury system which is coordinated by a Cooperative Extension specialist at the federal level. This group of state and county subject matter specialists "referees" curricula that are submitted. They use 14 criteria (figure 3.) in the review process and often require a design team coordinator to refine the curriculum in question before it receives Jury approval. This approval is signaled on the cover of the curriculum and increases the marketability dramatically.

Problems Yet Unresolved - 4HCCS has evaluated and adjusted its operations, since 1990, in order to achieve its mission. Many problems with needs assessment, production, marketing, and evaluation have been successfully addressed. Problems,

Figure 3. National Criteria For 4-H Youth Development Curricula (USDA, 1998).

1. All 5 steps of the experiential learning model (experience, share, process, generalize, apply) are completed.
2. Volunteers and youth are partners in planning, implementing, and evaluating the learning process.
3. Materials include options for using the curriculum in multiple delivery modes. Materials are user friendly.
4. A variety of educational experiences are provided for different learning styles.
5. The reading level is appropriate.
6. Positive attitudes toward learning are encouraged because materials are fun, appealing, engaging, and challenging.
7. Targeting life skills for each learning experience are clearly identified.
8. The curriculum is sensitive to audience diversity.
9. Facts and terminology are accurate and current.
10. Subject matter is focused on the growth and development of the learner.
11. Design, format, and packaging are appropriate.
12. Goals, outcomes, or objectives are clearly stated.
13. An evaluation tool is included which provides feedback to participants on their accomplishments.
14. Evidence is provided by authors that participants who use the material achieve stated objectives.

however, still arise.

Costs of production are still higher than extension educators would prefer. These costs are passed down to state extension services, county extension programs, or the youth and volunteer leaders that use the curricula. To some extent, quality of curricula depends on resources invested which means costs to the ultimate users.

More evaluation is needed to document changes in life skills of youth. While reactions of users to new curricula are relatively easy to document, impacts of the curricula on youth and volunteer leaders over time are difficult to document. The evaluation task force of the 4HCCS Steering Committee is working on instruments and procedures to document these changes; however, they are still being piloted.

Some long-term 4-H volunteer leaders prefer a teacher-centered curriculum which focuses on subject matter. They are accustomed to that type of curricula. The new emphasis on experiential learning and on life skills, as opposed to the purely subject-matter emphasis of the older materials, is sometimes disconcerting. They ask, "where is the substance." New volunteer leaders do not seem to have this problem.

Sometimes production deadlines affect the quality of products, and some 4HCCS products lose money. Production of 4HCCS curricula must be efficient and ultimately cost-effective. Deadlines are critical to economical curriculum production. Efficiency, however, must be balanced by quality of the final product. Quality does not always adapt to efficiency.

Educational Importance Still, by pooling resources, 4HCCS has provided a model of collaboration for curriculum development. This model has been called "one of the most significant innovations in 4-H in the last 20 years" (Allan Smith, 4-H National Program Leader, personal communication on May 7, 1998). These curricula address the issues facing youth, families, and communities in the United States.

If nonformal educators can learn from the 4HCCS model, they can use scarce resources to provide curricula in nonformal education in other countries. Adapting the model to other countries will require some changes from 4HCCS. The sophisticated level of organization that has evolved, and continues to evolve, may not serve groups with more modest goals. Funding may be needed to replace the resources of the Cooperative Extension Services which is, in turn, supported by the Land Grant University model in the United States. Curricula may need to be more focused on community development and national development in countries that have lower per capita income and social issues which differ in importance to those in the US.

To adapt the lessons learned by 4HCCS, other countries will want to consider their own educational traditions, especially successful educational models. Their adaptations of 4HCCS may need to include elements of these traditions and models. Dimensions of nonformal education should also be considered in those adaptations. These dimensions include: flexibility, learner-centered focus, materials that allow for more local variation in their use, practicality, and less dependence on hierarchical authority.

In the meantime, youth development organizations around the world can purchase and use 4HCCS curriculua. The catalogue provides descriptions, prices, and instructions for ordering the products. Product premier conferences and design team workshops are not limited to member states. Anyone is welcome to register and attend.

References

4HCCS. (1998). FY99 4HCCS steering committee resource notebook. St. Paul, MN: University of Minnesota Distribution Center.

Brembeck, Cole S. and Thompson, Timothy J. (1973). New strategies for educational development. Lexington, MA: Lexington Books, D. C. Heath and Company.

Coombs, Philip H. and Ahmed, Manzoor. (1974). Attacking rural poverty: How nonformal education can help. Baltimore: The Johns Hopkins University Press.

Etling, Arlen W. (1993). *What is nonformal education?* Journal of Agricultural Education, 34(4), 72-76.

USDA. (1998). National criteria for 4-H youth development curricula and the national 4-H curriculum collection: http://www.reeusda.gov/new/4h/curricul/apph.htm

Zurcher, Thomas D. (1998). 4-H CCS calendar, July 1998 to September 1999. In 4-H CCS Design Team Coordinator Resource Notebook. St. Paul, MN: University of Minnesota Distribution Center.

DANCING TO A NEW TUNE:
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Abstract

The ever increasing importance of women and their role in society has strengthened tremendously since the late 1940s. Significant strides have been made to improve the status of women, to empower them, and to set standards for future generations. These strides have seen changes in the way development and extension practitioners' view and work with women. The changes have shifted from a focus on women-only to that of 'gender'. This paper clarifies gender and related concepts, provides tools for agricultural and development practitioners in gender analysis and gives insights into the educational importance of including a gender perspective.

Dancing to a New Tune: Gender & Agricultural Development

Everyone always talks about Fred Astaire; they should remember that Ginger Rogers did it backwards and in high heels (Unknown).

The metaphor of ballroom dancing illustrates the important role of Ginger Rogers and her contribution to the world-renowned dancing of Fred Astaire. However, without each other neither would likely have had such a successful career. Their interdependence is noteworthy as we examine the change in development paradigms regarding women and men.

With greater recognition of their critical role in human and community development processes, the contributions of women have taken on new meaning over the past thirty years. Recently, the nature and context of discourse on the subject has evolved away from a discussion centered on women and has emerged as a discussion on gender. A realization has surfaced that to make progress on the advancement for women, it takes a concerted effort from both women and men.

Purpose

The purpose of this paper is to present a set of philosophical themes regarding the importance of a holistic approach to gender, with particular reference to agriculture. The paper identifies key considerations that ensure a gender perspective is included in the development process. This presentation is intended to have an impact on the treatment of gender and development in agricultural programs.

Literature Review

A review of the literature shows the evolution of our collective understanding of the role of women's contributions to human progress in developing countries. The UN Commission on the Status of Women was formed in 1946, after fierce lobbying by women representatives. Yet it took nearly 30 years before any significant strides were made to include the role of women as an important point of discussion among mainstream development agencies (Tinker, 1990).

The 1960s are often characterized as the beginning of the Green Revolution. Yet, it was also a time of colossal failures of large scale, mechanized agriculture development schemes. It was during this decade that Danish economist, Ester Boserup hypothesized that 'modernization strategies undermined both women farmers and agriculture' (Staudt, 1998:70). These failures inspired a shift in focus from machines to people and from large scale to "small is beautiful" (Schumacher, 1973).

Thus it was Boserup (1970), who spawned groundbreaking discussion and debate on Women in Development (WID). This discussion focused on the integration of women into existing development processes to bring about equal opportunity for women. WID was more interested in issues of equality before the law and greater access to education than economic or sustainable development. From an agricultural standpoint, WID supported changes in the laws, policies, and policy implementation to increase women's access to landownership, credit and extension services (Staudt, 1998). However, the biggest criticism of WID was that it came across as a colonialist perspective dictating what women in the South needed (Ghorayshi and Belanger, 1996). Initially, funded WID projects were often separate, women-specific efforts that operated with the prevailing view that women were victims rather than active participants.

In 1975, the United Nations (UN) declared the Year of the Woman and thus women's development issues started to take on a deeper meaning. Women's issues took a much broader view, focusing not only on the needs of the urban and Westernized educated elite, but also on both developing and industrialized countries (Tinker, 1990:4). It was during this period of time that women's issues and development were conceptually linked (Young, 1993: 19). This concerted effort spearheaded the UN's Decade on Women, 1976-1985, which started with the International Year of the Woman in Mexico in 1975 and was heralded as the beginning of a new era in women's issues. This followed a UN Conference on Women in Copenhagen in 1980 and the high profile Nairobi Conference in 1985. Symbolically, these three conferences helped enormously to legitimatize women's issues, to bring attention to the devaluation of women's productive and reproductive roles, and to heighten awareness of their inequality and growing poverty in most countries of the world.

By the mid-1980s, Gender and Development (GAD) emerged in response to some of the weaknesses noted in WID. GAD posited that a focus on women alone was inadequate to understand and explain the opportunities and complexities for women as agents of change. GAD sought goals of sustainability and equity through an analysis of the structures and processes that have given rise to disadvantages among women. Initially, GAD addressed issues in the household, where gender relations were most visible. However, research showed that gender relations were most critical in government and business institutions (Staudt, 1998).

In 1995, the Fourth World Conference on Women was held in Beijing, China amidst growing concern over human rights issues. The conference devised a Platform of Action to achieve peace, development, and equality for women noting the growing concerns on such issues as poverty and domestic violence.

RESULTS

Central to this paper is the notion of gender. Gender alone is sometimes confused as a women's-only focus in agricultural development and other contexts. However, gender connotes a view of the world in which men and women are both critical players. A clear distinction between gender and sex is essential in the development processes. Gender focuses on the social construction of what it means to be male or female and addresses the socialization processes and its impact on women and men's eventual roles in society. Sex on the other hand, looks at women and men from a biological and reproductive standpoint. Social construction consists of institutional and legal structures, sociocultural attitudes, and religious beliefs and practices which shape women and men's lives. These factors can either work in favor of or against decreasing gender disparities (Staudt, 1998).

When gender is used as an adjective, it entails a complex and sometimes confusing list of terminology. The following are key gender concepts developed by INSTRAW that help lay a foundation.

> Gender-biased: the unequal allocation and exclusion to various resources such as credit, education, food, job, information, and/or training.
>
> Gender-blind: the act of overlooking gender as a key factor in the choices available to women and men.

Gender-sensitive: the ability to consider *who benefits* from development programs and *who does not.*

Gender analysis: the continual evaluation of roles of women and men focusing primarily on imbalances in power, wealth, and workload. (INSTRAW, 1996: 13)

'Gender analysis is fundamentally a matter of disaggregation' (Miller & Saharzi, 1998), which emphasizes the descriptive nature of men and women. Examples of key gender-disaggregated indicators based on a percentage of women participants or beneficiaries of project activities include: recipients of credit, participants of research/farmer consultations, members of cooperatives and other associations, participants of extension activities, and others (Fong and Bhushan, 1996). Gender analysis looks at these indicators, while at the same time it recognizes men's participation in the development process and seeks their support in implementing change.

Incorporating a gender perspective into agricultural programs and projects is essential (INSTRAW, 1996). A gender perspective is the ability to *distinguish* between what is biological and the institutional and cultural structures that have played a role in shaping women and men's lives and to *dialogue* about changing what we can change: the socialization process of gender. The socialization of children has a significant impact on the roles they later assume as adults—both men and women.

Why is gender important? Women are integral in most agriculture-based developing economies. Women provide the labor for a majority of the food produced, which places food security as one of their responsibilities. These activities contribute to the overall household income and well being. Yet, women are often limited in terms of access to resources and opportunities and according to one source 'their productivity remains low relative to their potential' (Fong and Bhushan, 1996).

The role of men in the development process is necessary to lessen these disparities. To achieve sustainable and people-centered development special attention must now be paid to the roles of men and women. Understanding men's roles—their responsibilities, needs, access to resources, opportunities and decision-making is beneficial to all parties involved. Having this knowledge will aid in comprehending the challenges that confront women and in developing plans for coping with these strategies.

The approach to development that incorporates these ideas is known as Gender and Development (GAD). As mentioned in the literature review, GAD evolved around the mid-1980s in response to weaknesses in the WID approach. Central to GAD are three main concepts:

1. A focus on women alone is inadequate in the development process since development affects men and women differently;
2. The socialization of men and women gives rise to different priorities and perspectives. An analysis of social organizations and social process has to take into account the structure and dynamics of gender relations;
3. The totality of women's and men's lives have to be the focus of analysis, not merely their productive, or their reproductive activities.

(Tinker, 1990; Young, 1993; INSTRAW, 1996; CEDPA, 1997)

These concepts are the very foundation for gender-focused development projects. Applying these concepts through gender analysis is a crucial step in the development process. Gender analysis is highly useful in the development process and can ultimately increase efficiency, sustainability, and equity in rural and agricultural development. Moving beyond needs to more long-term interests of women will help ensure sustainable and equitable practices for women in all aspects of society (CEDPA, 1997). The benefits of conducting gender analysis include:

> decreasing gender barriers that hinder agricultural productivity;
> enhance gender equality based on gender differences and needs;
> increase participation of both men and women in development activities;
> promote economic and social gains for both men and women.
> (Fong and Bhushan, 1996)

Furthermore, positive outcomes may result from including a gender perspective. Individual and community-based ownership can result in increases in overall project efficiency. Women, specifically, may witness an increase in income and greater access and control over resources, constraints, benefits and incentives. A gender perspective can strengthen collaborative decision-making between all players—men, women, extension leaders, and others. Analyzing gender role disparities and the balance of power in many decision-making bodies can serve as a first step toward giving women a voice in the development process. Investing in women by increasing their human capital via education and extension training along with the active participation of men can enhance overall agricultural productivity.

Several key components are essential in assessing and applying a gender perspective in agriculture-based development projects. These questions are meant to stimulate and raise more specific questions depending on a projects geographic location, commodity focus or economic development aim (Table 1).

A successful use of gender analysis can be seen in a four-year collaborative effort between the United Nations Development Programme (UNDP) and World Bank. The project was known as the 'Nigerian Women in Agriculture Program' with a purpose to provide women farmers better access to agricultural extension services, current and adaptive research information, and appropriate technology. Gender analysis revealed that a bias against women farmers existed. Through training and workshops, the project not only increased the number of women extension agents, but also strategies were developed for men agents to provide extension to women farmers. Overall, the project was very successful—the number of women agents doubled and the number of contacts to women farmers tripled in the first 18 months. The success of this project is evident in several ways, but much credit has been given to including men in the project (Fong and Bhushan, 1996).

EDUCATIONAL IMPORTANCE

Men and women do not live in isolation, as their activities at work and in the household make them interdependent. Gender analysis is not the only ingredient in effective development projects, but it is an important component in the development process that must not be overlooked. Basically, it *entails seeing what our eyes have been trained through socialization not to see*. Looking outside the box for ways to empower and better the lives of women and girls—all with the help of men—is consequential in bettering the lives of today's women and future generations. Efforts to encourage men as partners and allies in this process is important as educators and extension specialists.

A better understanding of gender and development should help practitioners to develop programs in agricultural education that are more effective for all involved. Furthermore, it can ensure that agricultural services positively impact both men and women. Training on gender and agricultural development can increase gender awareness and provide tools on gender analysis among practitioners. Such training can help to ensure that a gender perspective is mainstreamed into all policy, programs, administrative and financial activities, and organizational procedures within an organization.

TABLE 1. GENDER-ANALYSIS CONSIDERATIONS

KEY COMPONENT	QUESTIONS TO CONSIDER
Needs Assessment	
Project Objectives	Do the objectives relate and reflect women and men's needs? Have women and men participated in the development of the objectives?
Women's Needs	What needs and opportunities exist for increasing women's productivity (and/or production), access to and control of resources and benefits? How do these needs and opportunities relate to the country's overall needs and opportunities?
Intervention method	Should projects be targeted or mainstreamed?
Identification	
Define target group	What are the existing roles—men, women, children?
Labor divisions	What are the existing divisions of labor in agricultural production; within the household?
Resource allocation	Who receives and has access to resources—credit, inputs, extension services?
Implementation	
Education and training	Staff/personnel comfortable and confident with gender terminology? Is a gender specialist required to assist with project?
Evaluation	
Feedback	Was information gender-disaggregated? Reliability of survey data?

(Rao, Anderson, and Overholt, 1991; Moser, 1993; Fong and Bhushan, 1996;)

REFERENCES

Boserup, E. (1970). Woman's role in economic development. George Allen & Unwin Ltd; London, England.

The Centre for Development and Population Activities (CEDPA) Publication. (1997). Gender and development. http://www.cedpa.org/frmindex.html

Fong, M.S. and Bhushan, A. (1996). Toolkit on gender in agriculture. Washington, D.C. The World Bank. http://www.worldbank.org/gender/#how

Ghorayshi, P. and Belanger, C. (1996). Women, work, and gender relations in developing countries. Greenwood Press; Wesport, CT.

International Research and Training Institute for the Advancement of Women (INSTRAW) Publication. (1996). Gender concepts in development planning: Basic approach. United Nations; New York, NY.

Miller, C. and Razavi, S. (1998). Gender analysis: Alternative paradigms. United Nations Development Program.

Moser, C.O.N. (1993). Gender planning and development: Theory, practice and training. London; Routledge.

Rao A., Anderson M.B., and Overholt C.A. (1991). Gender analysis in development planning: A case book. Kumarian Press; Hartford, CT.

Schumacher, E.F. (1973). Small is beautiful: A study of economics as if people mattered. Blond and Briggs; London.

Staudt, K. (1998). Policy, politics, and gender: Women gaining ground. Kumarian Press; West Hartford, CT.

Tinker, I. (Ed) (1990). Persistent inequalities: Women and world development. Oxford University Press; New York, NY.

Young, K. (1993). Planning development with women: Making a world of difference. St. Martin's Press; New York, NY.

THE TRANSITION FROM WELFARE TO WORK:

STRATEGIES AND IMPLICATIONS FOR

EXTENSION EDUCATION

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INTRODUCTION:

Legislation passed in the United States in 1995 altered the nation's welfare system drastically, imposing time limits and work requirements on most welfare recipients. Support from communities, including employers, service agencies, and concerned citizens is necessary for welfare recipients to be successful in both moving from welfare to work and continuing in their jobs. Successful educational programs for families affected by the United States welfare reform process require multi-disciplinary educational programs designed with input from program participants and supporting agencies. The Cooperative Extension System throughout the United States is in a position to respond and assist in shaping welfare reform at a local, state, and national level. Cooperative Extension is a community based educational arm of the land-grant universities that has successfully worked in conjunction with community agencies, organizations and government at the local, state, and national level.

PURPOSE: This paper presents an overview of family's in poverty in the United States and presents successful strategies for communities helping families become self-sufficient. The paper provides ways communities can respond to the needs and concerns of limited-resource individuals and families. Common elements of successful program strategies are highlighted.

PROBLEM/ISSUES: Most welfare recipients would prefer not to be dependent on government benefits, but despite their desire for paid employment, they face many obstacles that keep them from obtaining and keeping jobs that could support their families. Even when welfare recipients find full-time work, they typically earn close to minimum wage, which still keeps their family living in poverty. In fact, less than one-half of all poor families actually receive welfare benefits; the rest are the "working poor."

Low-income families in the United States are a diverse group, with a variety of causes for their poverty. Many families remain poor because of low earning capacity due to a lack of higher-wage jobs. Limited job skills and education, in addition to discrimination against women and minorities, often contribute to lower wages and fewer jobs. Low self-esteem and lack of motivation also decrease the ability to hold a well-paying job.

Changes in the overall economy have also contributed to poverty in families. Higher-paying manufacturing jobs have declined while temporary and part-time service jobs have increased. Service industry jobs are characterized by low wages with few benefits. The real value of wages has also declined in recent years, which has had a particularly negative effect on single-earner families.

Finally, problems with child care and transportation often restrict parents' ability to move out of poverty through paid work. Lack of available, affordable, quality child care can severely limit the ability to get an education, gain work experience, or hold a paid job.

In addition to these various causes of short-term or medium-term poverty, long-term poverty is often related to other problems such as substance abuse, chemical dependence, mental illness, medical problems, disabilities, or old age.

RESULTS: The Cooperative Extension System works at the local, state and national level in collaboration with other agencies and organizations to provide educational opportunities for limited resource audiences which will assist them in becoming self-sufficient. Cooperative Extension provides educational information and training for welfare recipients in nutrition, financial and resource management, personal and youth development, small business development, job readiness, parenting, mentoring and leadership education. Extension also plays a role in the training of community agencies, organizations, local and state government, and social service personnel in the areas of volunteer development, public issues education, community capacity building, and economic and community development. Extension agents act as convener, leader, and facilitator of community agency coalitions that have come together to address the concerns of limited resource families. In addition, the Cooperative Extension System serves as a key player in engaging families and community organizations in solving community problems thereby building linkages between families and communities.

IDENTIFYING ISSUES: The first step in ensuring the success of welfare recipients' transition from welfare to work is to identify the problems and barriers they encounter in this situation. An estimated 30% of welfare recipients do not have work experience. Every community needs to assess its own situation, identify specific barriers to the successful and continued employment of welfare recipients and the availability of needed support in the community. This assessment is the beginning point for community mobilization. By now, most counties and communities have determined the resources and limitations that exist to address the welfare issues in their area.

ORGANIZING COMMUNITY SUPPORT: When a community has multiple agencies, groups and organizations to work on self-sufficiency, it is helpful to develop a total community action plan so there is less duplication of efforts and less public confusion. A community steering committee or task force can be organized to determine the needs and concerns, organize efforts to address the concerns, and develop creative solutions to address the barriers. The committee could use focus groups or interviews to learn about the real needs of families, not the needs as perceived by external "judges."

Additionally, a public awareness campaign can be established to help the public understand the challenges limited-resource families face.

ACCESSIBLITY OF SERVICES: Many families who work describe the difficulty of tapping community services that are not accessible during non-work hours. Communities should determine the accessibility and availability of health care, counseling, swing shift child care, financial services, and other necessary services. Communities often have services that families in poverty do not know are available to them such as assistance with child care, counseling, job training, and formal education. These services can significantly improve welfare recipients' chances of success in their new jobs.

DEVELOPING EMPLOYER SUPPORT: Workers come from diverse backgrounds and consequently have diverse attitudes and ways of processing and managing change. Workers also may have diverse basic needs that are not being met sufficiently. Most have managed by reacting to crisis rather than by working toward objectives. Employers should be aware of the concerns workers have as they come into the workforce. Some daily work activities become challenging experiences that make coping difficult. A supportive employer helps workers get accustomed to procedures and the work environment. On-the-job training and mentoring ease the transition into a new job. Workshops in the workplace can be important to the success of all workers.

CHILD-CARE ARRANGEMENTS: Having reliable child care may mean the difference between being successful at work and not being successful. Research shows that it is more difficult for low-income mothers to return to work after they have children. Communities may need to take a separate look at child care to assess cost, quality, and related issues. Employers working together with the community may be able to support and enhance a variety of child care choices such as after-school care, day-care cooperatives, or school or church supported child care.

TRANSPORTATION: Lack of transportation prevents people from being able to accept jobs that are very far from home, and transportation problems also contribute to worker absences and tardiness. Employers, service agencies, and transportation services can all work together to implement creative solutions to transportation problems. A variety of transportation strategies can address the problem including: idle agency vehicles, used cars repaired, school buses, ride match, volunteer drivers, cooperative shuttles, car repair courses and vouchers.

HEALTH CARE: Limited resource families need health care services and insurance just as everyone does. The costs of medical care are always a major concern affecting both the family and the community. Communities can work with the Health Department to provide health fairs, immunization programs, and preventive health education programs. Health professionals serving as facilitators and partners can help people obtain information and avoid unnecessary clinic visits or to resolve serious health problems.

DEVELOPING DECISION-MAKING SKILLS: Some families are completely overwhelmed by the many decisions facing them. Limited-resource families are constantly challenged to decide between the cheapest alternative that does the job – even if performance is just barely satisfactory – or a better quality product that costs more. Good decision-making can be learned. Workshops, classes and positive role models can help people become better decision-makers

DEVELOPING TIME MANAGEMENT: People not used to balancing work and family time, find it difficult to manage effectively and keep order in their lives. From a community perspective, businesses and services can provide office hours and appointments helpful to the public's work hours.

DEVELOPING MONEY MANAGEMENT SKILLS: Limited resource individuals need knowledge, skills, and attitude changes to become effective money managers. They need to make better decisions on how to use their money; to develop skills in budgeting and record keeping; to think before spending money; and to select and control the use of a checking account and debit cards. If basic knowledge is learned, they can live within their income and reduce the stress that is caused by financial worries. Community leaders and employers who advocate for personal finance education find it has a positive impact on employee attitude and productivity.

CREDIT COUNSELING: Many individuals lack the knowledge, skills, or attitudes to plan and manage the use of credit. Communities need to take a look at local credit problems, bankruptcy trends, credit fraud, and the adequacy of education and counseling. A variety of educational activities can teach people how to manage their finances and credit including Extension, Consumer Credit Counseling Services, financial institutions. More communities are now making a special effort to assist immigrants and non-English speakers.

DEVELOPING LITERACY SKILLS: Many adults experience literacy difficulties serious enough to adversely affect their daily lives. When a community has a planned strategy for addressing literacy problems, a variety of successful programs will evolve. Resource centers, remedial education, job training and retraining benefit workers so basic skills are improved.

WORK CLOTHING: Workers need appropriate clothing for job interviews and for the work situation. Community organizations or businesses resale used clothing. Special programs also provide guidance on wardrobe selection, grooming, and garment care. Most communities have a thrift shop, consignment stores, yard sales or a Salvation Army where clothing can be acquired.

FOOD ASSISTANCE: Hunger is a serious and complex health problem in the United States. Adults who are not adequately nourished are at risk of nutrition-related disease, which in turn reduces their ability to earn and increases the costs of health care. Most every community addresses hunger needs in a variety of ways with church pantries, soup kitchens, and/or food drives. Creating a network of these agencies to work together can have a tremendous impact on the community. Businesses and corporations who support community-based food assistance programs encourage volunteerism and donations of food and services to the programs.

HOUSING: Families transitioning from welfare to work have special needs in the private housing market. Housing costs, discriminatory practices, and availability of housing are a few of the issues. If workers do not have safe, decent, and affordable housing, they will not be productive members of the work force. An employee concerned about how to make unaffordable rent payments will probably not focus on the job, as well as, someone without such concerns. Communities can draw upon a variety of partners when addressing the housing needs of those moving from welfare to work. Some partners assist communities and individuals by helping to locate affordable housing. Others help to establish housing by providing low interest loans.

EDUCATIONAL IMPORTANCE: Extension plays a key role in helping to educate decision-makers about realistic behavior changes, outcome measures and methods of successful program delivery. Extension is in a unique position to be able to address and investigate issues. Extension's research can examine the individual, the family and their communities, to determine the specifics surrounding the effectiveness of program implementation, our collaborative efforts and outcomes for participants. Applied research investigating short and long-term impacts of Extension programming is occurring.

The Extension Service is in a position to respond and assist in shaping welfare reform at the local level. A mix of program delivery strategies based on participant needs is essential for program accessibility. It is important to note that even though people will be exiting the welfare system, Extension will continue to have a role to play as people strive to become more self-sufficient. Extension can not only teach directly to limited resource families, but also play a key role in facilitating community involvement, training volunteers, and encouraging citizens to continue the process of lifelong learning.

When designing Extension programs in other countries for limited resource audiences, a number of Extension programming strategies are transferable. There is no one approach or simple prescription for designing successful programs to serve limited-resource audiences, however, there are some common elements which cut across a wide variety of strategies and delivery methods which could be considered almost universal. When programs provide nurturing connections to others, are culturally relevant and respectful, then programs will have more of a chance for success for individuals. From the community perspective, programs will have a strong chance of success when they are designed to be community-based, comprehensive, collaborative, intergenerational, preventive and accountable.

References:

A Citizen's Guide to Food Recovery. 1996. Washington, DC: United States Department of Agriculture.

Building an Understanding of Credit Services. 1994. Cornell Cooperative Extension. Ithaca, NY: Cornell University.

Folk, K.F. 1997. Poverty and Welfare Reform: A Resource Guide for Communities and Educators, VA1036. Madison, Wisconsin: University of Wisconsin-Extension, Family Living Programs.

Garman E. T. (Ed.) 1997. Personal Finances and Worker Productivity. Proceedings of the Personal Finance Employee Education Best Practices and Collaborations Conference, 1 (1). Blacksburg, VA: Virginia Polytechnic Institute.

Hofferth, S. and D. Chaplin. 1994. Caring for Young Children while Parents Work. Washington, DC: Urban Institute.

Session L Teaching Effectiveness

March 23, 1:00 - 3:00 p. m.

Session Chair - Gustav Duvel

Location: Maraval Room

Session L

TITLE: Teaching Methods, Their Use and Effectiveness as Perceived by Teachers of Agriculture: A National Study with Implications to International Agricultural Extension and Manpower Development
AUTHOR: Yun Ho Shinn, Robert A. Martin/Presented by Donn Russell
Seoul National University, Iowa State University
DISCUSSANT: Richard Liles

TITLE: The Qualification of Teaching Effectiveness Research For International Students
AUTHOR: Jim Knight. Frances Himes, Anita Zavodska, Danielle Hunt
University of Arizona
DISCUSSANT: Richard Liles

TITLE: What Employers Look for in Graduates Entering Agriculture-Related Professions: Lessons From Kenya
AUTHOR: John Gowland Mwangi, Jason Munyiri Githeko, Samuel Wachanga
Egerton University
DISCUSSANT: Barbara Ludwig

TITLE: Improving the Quality of Higher Education in Agriculture Globally in the 21st Century: Constraints and Opportunities
AUTHOR: David G. Acker
Iowa State University
DISCUSSANT: Barbara Ludwig

Teaching Methods, Their Use and Effectiveness as Perceived by Teachers of Agriculture: A National Study with Implications to International Agricultural Extension and Manpower Development

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Introduction

Agriculture is becoming more business-oriented, specialized, highly technical and internationalized. These changes require a more applied, more efficient and a developmental approach to teaching and learning (Shinn and Kamayaci, 1993). It is important to note that the literature states that students learn and achieve when competent teachers use well organized instructional strategies, a variety of methods and tools, and use them effectively. There are as many different kinds of teaching as there are teachers. Many studies have revealed that teaching activities are usually represented by teachers' teaching attitudes and their preferences regarding teaching methods. Carkhuff (1981, p. 90) stated that "some teachers emphasize the use of question and answer techniques, others use a lot of programmed instruction." Newcomb et al. (1986) stated that "instruction in agriculture varies depending on the level at which instruction is provided and the persons for whom the instruction is offered."

Purpose/Objectives

The primary purpose of this study was to identify perceptions of agricultural education teachers in the United States of America regarding selected principles of teaching and learning, the current use of selected instructional methods and tools and their effectiveness. A secondary purpose was to determine the relationship between the selected variables in the secondary agricultural education program. The following five objectives were addressed:

1. To identify the selected demographic characteristics of agricultural teachers in secondary agricultural education programs in the United States.
2. To identify agriculture teachers' perceptions regarding the principles of teaching and learning in secondary agricultural education programs.
3. To determine the extent of use of selected teaching methods and tools by teachers of agriculture in secondary agriculture education programs.
4. To evaluate effectiveness of selected teaching methods and tools by secondary agricultural education teachers.
5. To determine the relationship between the selected demographic characteristics of teachers and the perceived principles of teaching-learning, their use and effectiveness in agricultural education programs.

Methods and Procedures

The population for this study consisted of all secondary agricultural instructors in the United States as listed in the 1996-1997 National Directory of Vocational Agriculture Teachers. A total of 9,100 teachers made up the population.

A questionnaire was developed by the researcher. A survey instrument was developed to identify the agricultural education teacher's perceptions of selected principles of teaching and learning, identify teaching methods/tools and their perceived effectiveness in secondary agricultural education programs. A five-point Likert-type scale which is a technique widely accepted for measurements of perception and effectiveness (Simonson, 1979) was used in the study. The rationale for the selection of this research instrument was based upon the review of the literature. The instrument consisted of five parts: 1) the first part of the questionnaire was designed to determine teachers' perceptions of selected principles of teaching and learning, 2) the second part was to identify the extent of use of selected teaching methods, techniques and tools, 3) the third part was to identify the perceived effectiveness of the methods, techniques and tools, 4) the fourth part was to elicit the demographic and personal background data on the teachers, and lastly 5) the fifth part was structured to gather comments from teachers. Items on the first, second and third parts were randomly arranged on the questionnaire to reduce set response error.

After the first contact a follow-up letter was mailed to all participants who had not yet returned their questionnaires. Data collection was closed by with 444 (46.5%) questionnaires received. There were three hundred eighty-six usable questionnaires analyzed for the study. The differences between early and late responses were analyzed and there were no significant differences found between the two groups.

Findings

There were 339 (87.9%) male respondents and 47 (12.2%) female respondents.

The study provided an interesting profile to consider relative to the respondents. Over a third of the respondents had over 21 years of teaching experience. Over half of the respondents had master's degrees. Over two-thirds of the respondents were 30 to 50 years of age. Nearly 60% of respondents had eleven to twelve month contracts. Over 50% of the respondents indicated they had taken 5 or more courses related to teaching and learning. Nearly 70% of the respondents taught in rural areas and over 50% taught in small to medium sized schools. This result implies that most of the secondary agricultural education programs are offered in rural area.

Overall the respondents were in agreement with many of the principles on teaching and learning. Seven perception statements regarding selected teaching-learning principles had means ratings above 4.25 as shown in Table 1.

Data in Table 2 reveal the means and standard deviations of the respondents' perceptions regarding the use of selected teaching methods and tools in secondary

Table 1. Means and standard deviations of perceptions held by the respondents regarding selected teaching-learning principles in secondary ag-education programs (n=386).

Principle Statement	Mean	SD
Agricultural education teachers recognize that individual differences exist among students.	4.63	.63
Feedback is important for student learning.	4.46	.63
Teaching strategies are of little importance because students learn well any way.	4.44*	.74
Agricultural education teachers use a variety of evaluation procedures.	4.41	.64
Agricultural education teachers provide career guidance as necessary in teaching agricultural science.	4.40	.60
Agricultural education teachers set achievable objectives for lessons.	4.30	.61
Truly effective discipline and classroom management are inseparable terms.	4.25	.90

Scale: 1 = strongly disagree, 2 = disagree, 3 = uncertain, 4 = agree, 5 = strongly agree
*converted the values from negative statement to positive statement

Table 2. Means and standard deviations of ratings of respondents regarding the use and effectiveness of selected teaching methods and tools (n=3.86).

	Extent of Use †		Effectiveness ††	
Method, Technique, Tool	Mean	SD	Mean	SD
Laboratories	**4.16**	.84	**4.40**	.71

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Projects	**4.25**	.73	**4.38**	.69
Discussion	**4.26**	.74	4.07	.75
Contests (FFA, etc.)	**4.04**	.94	**4.24**	.81
Using real objects	**4.04**	.78	**4.24**	.75
Supervised experience	4.01	.92	**4.15**	.92

†Extent of use scale: 1 = not used, 2 = rarely used, 3 = sometimes used, 4 = frequently used, 5 = heavily used. ††Effectiveness scale: 1 = not effective, 5 = very effective, 5 = very effective

agricultural education programs. Those methods and tools perceived to be "heavily used" and/or frequently used" by respondents were demonstrations, discussion, laboratories, projects, contests, using real objects, supervised experience, problem solving approaches, lecture-discussion, chalk board and exams.

Table 2 also shows the means and standard deviations of respondents' perceptions of the effectiveness of selected teaching methods and tools. Those teaching strategies perceived to be "very effective" and "effective" were: laboratories, demonstrations, contests, using real objects, discussion, supervised experience, problem solving approaches, field trips, individualized instruction and lecture-discussion.

Table 3 indicates an analysis of data regarding respondents perceptions of the teaching/learning principles when grouped by the number of courses focused on teaching/learning taken by the respondents. The mean scores indicate that there were significant statistical differences between the group 'no courses taken (mean = 4.04) and the group '5 to 6 courses taken' (mean = 4.16) and '7 or more taken (mean = 4.17) It can therefore be concluded that the number of courses taken focused on teaching/learning by the respondents had an influence on their perceptions regarding selected teaching and learning principles. Group III rated computer-assisted instruction significantly higher than Group I. Group IV rated computer-assisted instruction significantly higher than Group I. Group V rated computer-assisted significantly higher than Group I.

Table 3. Analysis of variance of means/standard deviations based on respondents perceptions of teaching/learning principles when grouped by number of courses taken focused on teaching/learning.

Teaching-learning courses taken	N	Mean	SD	F-ratio	F-prob
None	8	4.04	.23	1.23	.05
1 to 2 courses taken	40	4.07	.25		
5 to 6 courses taken	91	4.16	.28		
7 or more courses taken	113	4.17	.34		
3 to 4 courses taken	134	4.10	.36		

Scale: 1 = strongly disagree, 2 = disagree, 3 = uncertain, 4 = agree, 5 = strongly agree

It was observed that eight teaching strategies (simulation, discussion, role play, pictures (posters, newsletters), individualized instruction, resource people, supervised experience and mentorship) were perceived to be used to a different extent by male and female respondents. Male groups rated simulations, individualized instruction, supervised experience and mentorship as being used to a higher degree than females.

There were 15 teaching methods/tools showing considerable variation in use among the respondents when grouped by the number of courses on teaching and learning that had been taken by the respondents. Overall, the data indicate that the more courses in teaching and learning respondents had taken the more use that was made of the following teaching methods: laboratories, simulation, projects, the Internet, role play, learning contracts, individualized instruction, using real objects television and brainstorming. Lectures, demonstrations, and field trips tend to be used more by teachers having fewer courses on teaching and learning. There were more differences among the respondents based on the number of courses taken in teaching and learning than on any other characteristic that was analyzed in this study.

Table 4 indicates that school location (urban, suburban, rural) had little effect relative to differences in the use of selected teaching methods and tools. Urban school teachers tended to use more student research, learning contracts, individualized instruction, and real objects. Rural school teachers tended to use more contests in their teaching. There were no statistically significant differences in the use of any other teaching methods and tools.

Perceptions of Secondary Agricultural Education Teachers Regarding Effectiveness of Selected Teaching Methods and Tools

In analyzing the data it was found that teaching experience was not a characteristic that indicated much variation in the perceptions of teachers regarding the effectiveness of selected teaching methods or tools. Table 5 indicates that more experienced teachers tended to believe that using the chalk board was more effective than did younger teachers. There appeared to be more variation among young teachers in the use of these methods/tools. No other methods/tools indicated a statistically significant difference based on teaching experience of the respondents.

Table 4. Analysis of variance of means/standard deviations based on respondents perceptions regarding the extent to which selected methods and tools are used when respondents are grouped by school location (n=386).

Teaching methods Techniques and tools	Urban (N=40) Mean/SD	Suburban (n=76) Mean	Rural (n=270) Mean	F-ratio	Prob.
Student research	3.27	3.15	2.97	2.87	.05*
	.87	.93	.88		
Learning contract	2.02	2.19	1.75	6.42	.00*
	.86	1.16	.95		
Individualized instruction	3.75	3.38	3.42	2.22	.10
	1.00	.84	.97		

Contests (FFA, etc.)	3.75	3.94	4.11	3.17	.04*
	.82	.79	.75		

Scale: 1 = not used, 2 = rarely used, 3 = sometimes used, 4 = frequently used, 5 = heavily used
Group I = urban, Group II = suburban, Group III = rural
*Significant at .05 level

There were very few statistically significant differences between male and female respondents regarding the perceived effectiveness of selected teaching methods and tools. Table 6 indicates that male teachers rated supervised experience and the overhead projector higher in effectiveness than female teachers had indicated. Female teachers rated the use of simulations and cooperative learning higher in effectiveness than male teachers had indicated. There were no other statistically significant differences in the other 35 teaching methods/tools in the questionnaire when analyzed by gender of the respondents.

Table 5. Analysis of variance of means/standard deviations based on respondents perceptions regarding the effectiveness of selected teaching methods and tools when respondents are grouped by years of teaching experience (n=386).

Teaching methods and tools	I n=72 Mean/SD	II n=57 Mean	III n=69 Mean	IV n=60 Mean	V n=128 Mean	F-ratio	F-Prob
Chalk board	3.31	3.66	3.50	3.41	3.67	2.81	.02*
	1.03	.69	.81	.78	.76		
Role play	3.20	3.38	2.89	3.11	3.30	2.28	.05*
	1.09	1.14	1.11	1.01	.96		
Oral presentation	3.37	3.78	3.60	3.53	3.55	2.01	.05*
	1.02	.64	.94	.70	.80		

Scale: 1 = not effective, 2 = of little effectiveness, 3 = somewhat effective, 4 = effective, 5 = very effective
Group I = 1 to 5 years teaching experience, Group II = 6 to 10 years teaching experience, Group III = 11 to 15 years teaching experience, Group IV = 16 to 20 years teaching experience, Group V = 21 or more years teaching experience *Significant at .05 level.

Table 6. Means, standard deviations and t-values of female and male respondents perceptions regarding effectiveness of selected teaching methods and tools (n=386).

	Male (n=339)		Female (n=47)			
Method or Tool	Mean	SD	Mean	SD	t-value	prob.
Simulation	3.70	.82	3.73	1.09	-.14	.04*
Overhead projector	3.40	.88	3.31	1.12	.57	.02*
Supervised experience	4.18	.84	3.85	1.31	2.36	.00*

Cooperative learning	3.45	.97	3.83	1.21	-1.75	.03*

Scale: 1 = not effective, 2 = of little effectiveness, 3 = somewhat effective, 4 = effective, 5 = very effective
*Group mean differences significant at .05 level

Table 7. Analysis of variance of means/standard deviations based on respondents perceptions regarding the effectiveness of selected teaching methods and tools when respondents are grouped by school location (n-386).

Teaching methods & tools	Group	I(n=40) Mean/SD	II (n=76) Mean	III (n=270) Mean	F-ratio	Prob.
Chalk board		3.20	3.71	3.53	5.04	.00*
		.75	.84	.82		
Role play		.355	3.28	3.11	3.29	.03*
		.98	.97	1.08		
Lecture		3.02	3.43	3.32	3.22	.04*
		.94	.78	.82		
Contests (FFA, etc.)		3.92	4.21	4.29	3.81	.02*
		1.16	.78	.73		
Supervised experienced		3.75	4.15	4.20	4.27	.01*
		1.40	.89	.82		

Scale: 1 = not effective, 2 = of little effectiveness, 3 = somewhat effective, 4 = effective, 5 = very effective
Group I = urban, Group II = suburban, Group III = rural
*Significant at .05 level

Conclusions

1. The teaching/learning principles included in this study were strongly supported by the respondents.
2. The most effective teaching strategies in the secondary agricultural education programs were various student centered approaches as laboratories, demonstrations, contests, using real objects, discussion and supervised experience.
3. Computer-assisted instruction, distance programs and the Internet, television, learning contracts and case studies were not being used to a great extent in agricultural classes. Limited resources, according to respondents' comments, hampered the extensive use of these tools for teaching.

Recommendations

The following recommendations were made based on the findings and conclusions of the study:

1. The principles of teaching and learning and related theories should be addressed in the teacher education and teacher in-service programs because the amount of education in this area has an impact on use and effectiveness of selected teaching methods/tools.
2. The findings should be shared with teachers and teacher educators to emphasize the importance of the appropriate use of teaching/learning principles, methods and tools.

Educational Importance and Implications

Delivering subject matter with appropriate application is one of the most essential activities for teachers and human resource development specialist. This study has provided another opportunity to focus attention on the teaching/learning process and how it might be improved. The principles, strategies and tools tested in this study should be evaluated at all levels of education. Teaching and learning is not about "level" or "place" anymore, it is about "what and how" to help learning to become more active. This study has implications to teacher preparation, teaching formal education classes and conducting workshops in human resource development.

References

Carkhuff, R.R., and Berenson, D.H. (1981). *The skilled teacher: A systems approach to teaching skills.* Amherst, MA: Human Resources Development Press.

Kahler, A.A. (1995, December). *Dawn is Breaking. Are We Prepared for the New Day?* Paper presented at the AAAE Annual Meeting, Denver, CO.

Kassem, A.K. (1992). *Teacher Perceptions of Agricultural Teaching Practices and Methods for Youth and Adults in Iowa.* Doctoral dissertation, Iowa State University, Ames, IA.

Moore, G.E. (1994). Teaching Methodologies in Agricultural Education: A Historical Analysis. *Proceedings of the 21st Annual National Agricultural Education Research Meeting*, 21, 230-235.

Odubiyi, A.O. (1988). *Perceptions of Iowa vocational agricultural teachers regarding teaching methods used in agricultural education.* Unpublished master's thesis, Iowa State University, Ames, IA.

Rollins, T.J. (1998). *Level of critical thinking of Iowa secondary agriculture students.* Doctoral dissertation, Iowa State University, Ames, IA.

Shinn, Y.H., and Kamayaci, M. (1993). The Trends of Agricultural Industry and Rural Society. Unpublished paper, *The Agriculture and Rural Research*, Tokyo, Japan.

Simonson, M. (1979). Attitude measurement: Why and how. *Educational Forum, 43* (3), 34-38.

Yelon, S.L. (1996). *Powerful Principles of Instruction.* Lancing, MI: Longman Publishers.

The Qualification of Teaching Effectiveness Research For International Students

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Introduction:

Research on teaching effectiveness has been going on for many years. During that time, teaching variables related to student achievement have repeatedly been identified. In fact, the literature in this area is substantial enough to suggest that some of the variables have been so consistently correlated to learning that they may be considered to be validated. Rosenshine and Furst (1971), identified clarity, variability, enthusiasm, task oriented and/or businesslike behaviors, student opportunity to learn criterion material, use of student ideas and general indirectiveness, *criticism, use of structuring comments, types of questions, probing, and level of difficulty of instruction as commonly associated variables to learning (* denotes a negative correlation). Duncan and Biddle (1974) found similar traits in their review but added that appropriate praise and positive reinforcement were also found to be positively correlated to student achievement. Over the past two decades, research efforts on teaching effectiveness at various levels of instruction have repeatedly verified the basic findings of Rosenshine and Furst, and Duncan and Biddle (Beidler, 1993; Bettencourt, 1983; Croker, 1996; Emmer, 1987; Miller, 1996; Murphy 1994; Rosenshine, 1982; Streeter, 1986).

In college classrooms, intercultural diversity presents a challenge to the teaching/learning process. The question is whether or not the validated variables function across international boundaries. Generally, American modes of teaching/learning value linear thinking, individualism, competitive processes and a preference for noetic ways of knowing (Bennett, 1998; Lyons, 1994). Other cultures often have preferred ways of learning that value interdependence, intimate collective learning communities, and contextual ways of knowing. Thus, greater value is placed upon engaging the whole learner in a more affective, tactile, relational, experiential, as well as, intellectual fashion. The premise behind a more inclusive classroom is not to value one mode of teaching/learning more than another, but to teach in multiple modes to create a learning environment that engages all learners in a holistic way.

Purpose of Paper:

The purpose of this paper is to report the results of work done at The University of Arizona in an attempt to qualify ten validated teacher traits for international students by use of a focus group. The project was driven by the following questions:

1. How do international graduate students relate to the most effective teaching variables identified in the American culture?

2. What can be done to "qualify" the identified variables for international graduate students?

In other words, this project adds a cultural dimension to the teaching effectiveness research base by offering special insights and parameters for teaching in intercultural classrooms.

Methods and Data Sources:

A focus group of ten graduate students, attending The University of Arizona College of Agriculture from Tunisia, Mexico, Brazil, Guyana, Germany, Japan and the Czech Republic during the Autumn semester of 1998, was asked to discuss their perceptions of ten identified variables. The variables used for the study were:

1. Clarity: Cognitive clarity of a teacher's presentation, as indicated by the organization of the teacher, the way the material is structured and organized, the metaphors and anecdotes used, and the language used by the teacher.

2. Variability: Teachers' use of variety, as indicated by the use of instructional materials, teaching devices, types of tests, level of discourse, and types of student tasks.

3. Enthusiasm: Teachers' enthusiasm, as indicated by movement, gestures, voice inflections, and teacher questions, especially questions calling for interpretation of facts.

4. Task-Oriented and/or Businesslike Behaviors: Degree to which a teacher is task oriented, achievement-oriented, and/or businesslike, as indicated by the way the teacher prepares for and conducts classroom sessions, encourages students to work hard, and has a need to "get something accomplished," that are all driven by the use of time.

5. Student Opportunity to Learn Criterion Material: Students are "let in on" the expectations of the teacher and may even be involved in determining the actual measurement outcomes.

6. Appropriate Praise: Praise that is earned (related to the expected outcomes), specific, timely, sincere, and in proportion to the action being praised.

7. Positive Reinforcement: Techniques used to reward or recognize behaviors that are congruent with teacher expectations, such as positive comments, nonverbal cues, and written notes.

8. *Criticism: Comments about performance that focus upon "what is not correct." (This particular variable is negatively correlated to student achievement.)

9. Use of Structuring Comments: Comments designed to provide an overview or a cognitive scaffolding for what is to happen or has happened, reviewing or summarizing statements, induction set, and coaching.

10. Types of Questions: Questions that provide a variety of cognitive level responses including what, where, why and how, and questioning techniques, such as reciprocation, redirection, and probing.

Based upon their individual perceptions, the students were asked to describe how each variable would need to be adjusted, if necessary, to make it sensitive to their perceptions of their respective cultures. Acknowledging that greater difference within than between cultures can exist, it is for this reason that the sample of international graduate students was chosen. Although "international" is a homogeneous term for a culturally diverse sub-population, this diversity provided the breadth of perspective needed for this study. Notes were taken during the discussion and were analyzed using a content analysis process focussed upon the repeated use of specific descriptors and the development of themes.

Results and Conclusions:

In general terms, the validated teaching variables were found to be as important to international graduate students as they were to American students. However, the study revealed several themes that represent polarities existing between the American culture and other cultures.

1. Relative to the variables clarity, variability, enthusiasm, appropriate praise, positive reinforcement, *criticism and structuring comments by teachers, the international students indicated that they were important to their learning.

2. International students noted that they regard the high level of task orientation as overwhelming. It is perceived as unnecessary busy work. They generally preferred a more unstructured environment that they described as less task oriented (not less content) with more time "to be" and "to reflect." Task orientation, as perceived by Americans, is generally applied, mostly structured in a linear fashion with emphasis upon repetition and routinization with intent toward institutionalization. For the learner this means creating skills and harnessing knowledge for the intent of building effective environments/organizations. Mastering a skill and providing results are highly equated with professionalism, and valued for their serious nature and business like manner. Conversely, the international students are often from cultures that value "being" where people are rewarded for the following: articulating personal and historical philosophy; contextual learning and knowing being viewed as a far more mature and intelligent way of interacting; developing and maintaining long term relationships that are honored above individual goals and outcomes; and reflecting as essential to any serious endeavor.

3. International students enjoyed the Socratic method often demonstrated by American faculty members. They voiced a preference toward participatory learning. This was noted as not being given the answers, rather working jointly toward solutions with the faculty member and peers.

4. International students noted the value of American modes of teaching. However, their ways of knowing move beyond the linear modes common to American classrooms. Contextual ways of knowing are generally preferred and have equal, if not more value, to international students than linear and direct communication. Context, simply defined, is the frame of reference or perspective from which student understanding and/or learning are derived. Americans tend toward low context while many other cultures tend toward receiving and processing information in high context (Hall, 1981). Knowledge, then, may be absorbed via modes that relate to context and not just the content and/or conclusion. Thus, for international students, knowledge may be transmuted to a wider range of possibilities by opening and engaging the senses, such as the affective, tactile, spiritual, and philosophical.

   Generally, the American instructor is trained to deliver information in a lecture format where meaning is mostly transmuted via the spoken word and conditioned by student requests to "please don't beat around the bush." It may be a new and uncommon experience for the instructor to learn to recognize and value that international students are making tremendous internal meaning from posture, appearance, inflection of voice, eye contact, informality, space and a multitude of other internal contextual references that are commonly discarded in low context as irrelevant to the direct meaning of the spoken word.

   Faculty members who are interested in increasing international student participation in the classroom may want to create an environment that is conducive to contextual learning. This may be accomplished by infusing kinetic, tactile, and visual examples, as well as teaching with metaphor. Simply stated, faculty members can enhance any lecture (and increase variability) by moving beyond conveying meaning with words alone. Examples include telling stories, providing examples relevant to the learners, introducing objects, artifacts, and visual imagery, having students practice new concepts with movement, touch, and using multimedia.

5. International students generally preferred the use of peer and collective learning modes such as the creation of a learning community where students share resources and work jointly on projects. The American cultural approach, on the other hand, tends to be highly individualistic and often competitive. American students are resistant to group projects where grades are administered collectively. Consequently, faculty members often opt for instructional designs deplete of cooperative learning methods. Students often graduate without the essential communication, participation, and perception skills necessary to work successfully on joint projects.

   The presence of international students in the classroom offers faculty members an opportunity to pair international and domestic students in the forming of learning communities where an environment of cooperative learning is experienced and perceived in multiple contexts. These created learning environments, if constructed carefully by the faculty members, provide students with the opportunity to experience "difference" in a safe environment. The students can grapple with the multiple ways of perceiving and knowing, while creating a preferred learning environment for international students. Current cooperative learning techniques, as espoused by Angelo (1993) and Johnson (1998), provide a wealth of experience and expertise to draw from when incorporating cooperative learning into the classroom.

6. Faculty roles and responsibilities were viewed by international students in vast and varying ways from being the absolute expert to being a facilitator of the learning process. The differing views appeared to be based upon cultural influence and personal experiences.

   It is important for American faculty members to realize that international student attitudes toward them can be quite different from those of American students, and acknowledge them. At times, when teaching methods may be problematic for some international students, it can be difficult for them to bring it to their professors' attention, especially in class, for they do not wish to appear rude or improper. It is thus imperative, in order for international students to feel comfortable, that they have an opportunity to voice concerns to their professors, and that American faculty members are approachable. This means that they need to be both easily accessible and readily available for public or private consultation, while still being able to maintain professional distance. For example, professors who announce to the students that they are welcome to come by even if it isn't during posted office hours, and/or that they may make contact via e-mail or telephone if they need anything, are particularly welcome "invitations" for international graduate students.

Educational Importance:

While the general research findings related to teaching effectiveness are important for international graduate students, the polarities that surfaced during this study offer unique insights to making the teaching variables more effective for them. In reviewing these insights, it becomes clear that the lessons learned suggest other approaches that would be good strategies for all students. The already solid indicators of teaching effectiveness can be made even more powerful by enhancing them with the strategies preferred by international students. However, with a culture that places high regard for linear approaches focussed upon individualized efforts driven by task orientation and competition, achieving acceptance of the needed adjustments in instruction by professors will be a difficult issue to resolve.

References:

Angelo, Anthony. (1998). A teacher's dozen: Fourteen general, research-based principles for improving higher learning in our classrooms. AAHE Bulletin, April pp. 8-13.

Beidler, Peter G. (1993). What's your horse: Motivating college students. Journal of Excellence in College Teaching, 4, 9-26.

Bennett, Milton. (1998). Basic concepts of intercultural education. Yarmouth, ME: Intercultural Press.

Bettencourt, Edward M., et al. (1983). Effects of teacher enthusiasm training on student on-task behavior and achievement. American Educational Research Journal, 20, 435-450.

Clinchy, Blythe. (1989). On critical thinking and connected knowing. Liberal Education, 75, December, American Association of Colleges and Universities, Washington, DC.

Cox, D. E. (1996). Relationship of learning styles and cognitive performance utilizing a prescribed curricular modality. [On-line]. Current Research Information System (CRIS), Beltsville, MD: USDA. Available: http://cristel.nal.usda.gov:8080/cgi-bin/starfinder/7962/cris.txt

Croker, Robert E., et al. (1996). Defining instructional quality by employing the Total Quality Management (TQM) method: A research project. Paper presented at the American Vocational Association Convention, Cincinnati, OH.

Dunkin, M. J. & Biddle, B. J. (1974). The study of teaching. New York: Holt, Rinehart, & Winston.

Dyer, J. E. (1997). Role of learning style in cognitive process skill development. [On-line]. Current Research Information System (CRIS), Beltsville, MD: USDA. Available: http://cristel.nal.usda.gov:8080/cgi-bin/starfinder/7962/cris.txt.

Emmer, Edmund T. (1987). Praise and the instructional process. Journal of Classroom Interaction, 23, 32-39.

Hall, Edward. (1981). Beyond culture. New York: Doubleday.

Johnson, D. & Johnson, R. (1993). What we know about cooperative learning at the college level. Cooperative Learning Magazine, 13, 17-18.

Lyons, Nona. (1994). Dilemmas of knowing: ethical and epistemological dimensions of teachers' work and development. In L. Stone (Ed.), The education feminism reader, New York: Routledge.

Miller, G. S. (1996). Teaching and learning processes in agricultural distance education. [On-line]. Current Research Information System (CRIS), Beltsville, MD: USDA. Available: http://cristel.nal.usda.gov:8080/cgi-bin/starfinder/7962/cris.txt.

Murphy, Cheryl A. (1994). Concurrent and sequential occurrences of teacher enthusiasm behaviors. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA.

Paige, Michael. (1993). Education for the intercultural experience. Yarmouth, Maine: Intercultural Press.

Roberts, H. V. (1995). Academic Initiatives in Total Quality for Higher Education. Milwaukee, WI: ASQC Quality Press.

Roman, Leslie. (1993). White is a color! In McCarthy and Crichlow (Eds.), Racial identity and representation in education, New York: Routledge.

Rosenshine, Barak. (1995). Advances in research on instruction. Journal of Educational Research, 88, 262-268.

Rosenshine, Barak & Furst, Norma. (1971). Research on teacher performance criteria. Research in Teacher Education. Englewood Cliffs, NJ: Prentice Hall 37-72.

Rosenthal, Robert. (1985). Pygmalion in the gymnasium. Educational Leadership, 43, 36-39.

Streeter, Brenda B. (1986). The effects of training experienced teachers in enthusiasm on students' attitudes toward reading. Reading Psychology, 7, 249-259.

The Qualification of Teaching Effectiveness Research For International Students

Abstract

Using a focus group approach with international graduate students at The University of Arizona College of Agriculture in the autumn semester of 1998, this study provided cultural qualification to commonly identified variables associated with teaching effectiveness in the American culture. By involving international graduate students in an in-depth discussion of teaching variables, it was found that, in a general sense, the variables chosen for the study are important in other cultures as well. However, the international students in the study preferred more cooperative and less competitive environments. In addition, they preferred a different environment that allows for more interaction and reflection. These findings provide a frame of reference for professors to make the learning experiences for all students richer and more productive.

WHAT EMPLOYERS LOOK FOR IN GRADUATES ENTERING AGRICULTURE-RELATED PROFESSIONS: LESSONS FROM KENYA

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WHAT EMPLOYERS LOOK FOR IN GRADUATES ENTERING AGRICULTURE-RELATED PROFESSIONS: LESSONS FROM KENYA

Introduction

Knowing what employers look for in a job applicant may help trainers develop curricula that better address the needs of future employees. Consequently, the training institution will have greater credibility in the public eye and will attract better qualified students and more funding for its educational programs.

Global trends indicate that firms are under pressure to enhance the skill level of their employees. Many people believe that education and skill levels of the workforce will provide a major competitive advantage in the 21st century (Enrich, 1985; Throw, 1992). However, Benton, Bailey, Novella, and Stanback (1991) indicated that skill capacity is only one of several conditions for solving competitive difficulties. They believed that skill development should blend with larger goals such as promoting a work environment that facilitates lifelong learning and responsiveness to change. According to these authors, adults who are poorly educated cannot even make it into the workforce. Therefore, the education system should take greater responsibility to ensure that its graduates are well prepared for today's workplace.

Today's workplace is driven by developments such as the emergence of a competitive global marketplace, the use of new technologies in producing goods and services, and the introduction of different forms of work organisation (Frantz, Friedenberg, Gregson, & Walter, 1996). These developments have important implications on how students are trained in order to enter into and succeed in a changing work environment. Structural adjustment and liberalisation of Kenya's economy has reduced entry barriers to the local market and exposed many previously protected industries to global competition. Such industries have not survived the onslaught ("Sugar Firms," 1998). To help firms successfully adjust in this environment, universities need greater insight into the human resource needs of both public and private sectors. Such knowledge will facilitate better curricula while helping students discern the demands of the job market.

Studies done in the USA to identify new skill requirements (Carnevale, Garner & Meltzer, 1990; Commission on the Skills of the American Workforce, 1990) indicated that changes in the way industries operate have created new demands in the workplace. These demands include more complex tasks, use of new technologies, less direct supervision of workers, requirement of higher skills and knowledge levels in making decisions, and working as team members (Frantz et al., 1996). For developing countries such as Kenya, it is increasingly crucial that similar work be carried out to help prepare a workforce that can compete in the global marketplace.

The Statement of the Problem

Good training largely depends on the curriculum that is frequently reviewed to meet the challenging needs of the job market. Curriculum review is a dynamic process which should involve trainers, trainees and employers. The latter are particularly important because they are unlikely to employ graduates whose qualities they consider unsatisfactory. Training institutions often compete to produce marketable graduates and need to know what is expected of them. These expectations change with changing demands of the workplace and are best determined through research.

Purpose of the study

This study was designed to investigate what employers look for when recruiting new graduates for agriculture-related professions. Its specific objectives were: (a) to describe employment procedures of selected potential employers; (b) to ascertain and rank the qualities that employers look for in a job applicant; and (c) to propose, from employers' perspective, areas that universities should address in training future employees.

Research Methodology

This study used an interview survey design. Structured and open-ended questions were used in face-to-face interviews to gather data from selected respondents in Kenya. Interviewees included chief executives and senior officers responsible for recruitment in financial, research, and educational institutions as well as state corporations, government departments and non-government organisations. Interview guides were reviewed and found to be content valid by a panel of experts drawn from Egerton University. Cronbach alpha reliability coefficient for the quantitative portion of the interview guide was 0.80. Hair, Anderson, Tatham and Black (1992) indicated that a commonly used threshold for acceptable reliability is 0.70 and that values below 0.70 are acceptable if the research is exploratory in nature. Since the panel of experts found the instrument valid, and since its alpha coefficient exceeded the value required for acceptable reliability, the researchers concluded that the instrument was suitable for data collection.

Results

The organisations surveyed had recruited university graduates at varying capacities within the last five years. They usually advertised vacancies through the press and thereafter invited short-listed candidates for interview. In some cases, new employees were inducted into their jobs after recruitment to enhance their job performance. The organisations that participated in the study performed different roles. For example, the Ministry of Agriculture was involved in policy formulation; supply and provision of extension services; regulation and co-ordination of agricultural state corporations; facilitating crop and livestock production as well as environmental conservation. Educational institutions provided academic and professional training at secondary level or higher. Financial institutions offered banking and credit facilities for agricultural development while the remaining institutions were involved in the production, processing, distribution, local marketing and export of agricultural products.

When asked what qualities they sought in new employees, employers reported the following: Academic qualifications, professional training, experience on the job, possession of practical skill, personality (e.g., appearance, honesty, maturity), computer literacy, oral communication skills, and ability to offer leadership. Possession of these qualities enhanced production and reduced the cost of running the organisation. For example, graduates with some job experience could work with less supervision.

Asked whether they preferred graduates from certain universities, employers indicated preference for graduates from institutions whose training they perceived to be more practical-oriented. Such graduates, they said, were more productive in the workplace. One employer reported that he was able to send information technology graduates from a certain university straight to the workshop without additional training. Some employers preferred graduates from local public universities who they perceived to understand the Kenyan agricultural sector better than those from universities abroad. According to some employers Indian and Russian-trained graduates were generally weaker than their Western-trained counterparts in academic ability, communication skills (particularly in using the English language), and in teaching practical subjects such as Agricultural as well as Science and Technology.

When asked what weaknesses they had noted in new employees, the respondents reported wrong attitude towards work, acts of insubordination, dishonesty, inability to properly manage organisational resources, absenteeism, disinterest in the job as well as poor oral and written communication skills. Some of the new graduates expected to be given large offices and vehicles soon after employment. When these expectations were not met, they tended to become demoralised.

Employees who were interviewed indicated that they needed the following skills which, they said, should be made part of training: management and administrative skills, public relations, skills in handling stress particularly for graduates working for long hours under stressful conditions, skills in entrepreneurship, computer skills especially data processing, and skills in statistical data analysis.

When asked why employees changed jobs, the surveyed employees gave reasons that included prospects for better pay; harassment by superiors (e.g. being denied promotion when it was due, ethnicity, and corruption), moving to a more interesting job, poor work environment (e.g., where a teacher is working hard but pupils' performance in national examinations continued to be low due to poor school management and lack of job commitment among colleagues), and social considerations (e.g., moving to join family).

To improve the training of future professionals, employers suggested that raining institutions should enhance the practical component of the training by improving field attachment and other practical courses, include courses that improve one's interpersonal relations and provide skills in guidance and counselling, offer courses that sharpen one's skills in managing agricultural co-operatives as well as those that improve one's oral and written communication. Some state corporations required graduates who are able to drive and maintain vehicles. Therefore, courses on driving and basic vehicle maintenance should be included in the university curricula for agricultural professionals.

From a list of twenty one (21) desirable qualities for new employees, employers ranked the following, in decreasing order of importance, among the top ten: (a) knowledge of the job in terms of adequate professional preparation, (b) work commitment, (c) ability to complete assigned tasks on time, (d) punctuality, (e) maturity in terms of being sensible, experienced and knowledgeable enough to handle responsibilities, (f) effective use of available resources, (g) ability to work well with minimum supervision, (h) honesty, (I) general intelligence, and (j) the ability and willingness to work hard.

Employers complained that many new employees often lacked job commitment. Not surprisingly, this quality was rated second in importance. Employers greatly valued employees' ability to meet deadlines. This quality was rated third in importance and was closely followed by punctuality which was fourth in importance. Therefore, employees should develop these work habits to improve the chances of success in their careers.

Educational Importance

This study shed light on qualities employers value when recruiting new graduates for agriculture-related professions. Based on this knowledge, trainers can tailor their curricula to satisfy employers' expectations and prepare graduates to have a definite advantage in the job market. As a result of effective training, based on accurate needs assessment, the economic productivity of new graduates will be enhanced and their credibility augmented. Widespread adoption of this approach may have a positive impact on the national economy at a time when the nation craves for growth and industrial development.

References

Benton,L., Bailey, T.R., Noyelle, T.,& Stanback, T.M., Jr. (1991). Employee training and U.S. competitiveness: Lessons for the 1990s. Boulder, CO: Westview Press.

Carnevale, A.P., Garner, L.J., & Meltzer, A.S. (1990). Workplace basics. San Francisco, CA: Jossey-Bass Publishers.

Commission on Skills of the American Workforce (1990). America's choice: High skills or low wages! Rochester, NY: National Centre on Education and the Economy, Teachers' College, Columbia University.

Eurich, N.P. (1985). Corporate classrooms, the learning business: A report on education in American business and industry. Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.

Frantz, N.R., Jr., Friedenberg, J.E., Gregson, J.A. & Walter, R.A. (1996). The rationale in support of the standards. Journal of Industrial Teacher Eduaction, 34 (1), 44 - 66.

Hair, J.F., Jr., Anderson, R.E., Tatham, R.L. & Black, W.C. (1992). Multivariate data analysis with readings, (3rd.ed.). New York, NY: MacMillan Publishing Co.

Sugar Firms to Suspend Milling (1998, September 7). Daily Nation, (p.1).

Thurow, L. (1992). Head to head: The coming economic battle among Japan, Europe, and America. New York, NY: William Morrow.

Improving the Quality of Higher Education in Agriculture Globally in the 21st Century: Constraints and Opportunities

A paper presented at the 15th Annual Conference of the
Association for International Agricultural and Extension Education
Trinidad and Tobago, March 21 – 26, 1999

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Abstract

Agricultural knowledge systems play a central role in developing and disseminating knowledge, information and technologies relevant to improving global food security and environmental sustainability. Formal agricultural education is one component of agricultural knowledge systems. This paper argues that current agricultural education systems are in need of fundamental reform to support improvements in global food security and environmental sustainability. Constraints and opportunities are presented relative to improving the quality of higher education in agriculture globally. Action is urged in moving forward aggressively on institutional and global levels to encourage needed reforms. Challenges discussed are the lack of global cooperation, the limited frame of reference associated with educational nationalism, underutilized sources of knowledge, the need for globalization of educational content, gender imbalances among students and faculty members, narrow disciplinary approaches used in organizing learning, and the narrow definition of scholarship and its impact on recognition systems at institutions engaged in higher education in agriculture. The paper concludes that advances in communication technology coupled with a rebirth of global cooperation make it possible to achieve significant advances in higher education in agriculture in support of the quest to improve global food security and environmental sustainability. The newly initiated Global Consortium for Agricultural Universities is an example of a mechanism for facilitating global cooperation to advance this agenda.

Introduction

At the World Food Summit of 1996, the world community agreed to a target of reducing the number of malnourished people in the world by 50 % by the year 2015. Alex McCalla (1998) of the World Bank makes the case that knowledge will be an increasingly important driver in expanding food production. This paper begins with the premise that agricultural knowledge systems play a central role in developing and disseminating knowledge, information and technologies relevant to food security and environmental sustainability. This paper focuses on one component of the agricultural knowledge system: institutions providing higher education in agriculture. The paper argues that current systems of higher education in agriculture are in need of fundamental reform to support improvements in global food security and environmental sustainability.

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In 1997, the Agricultural Education Group of the Food and Agriculture Organization of the United Nations published a study entitled *Issues and Opportunities for Agricultural Education and Training in the 1990s and Beyond*. It pointed to the failure of agricultural education and training in many developing countries to adapt to a changing world and presented a thoughtful analysis of the underlying issues (FAO, 1997). The study examined agricultural education and training at all levels. Issues such as relevance of education offerings to the needs of farmers, the commercialization of agriculture, the degradation of the environment and the role of women were all examined through the FAO expert consultation process that preceded the publication of this study. Van Crowder (et al., 1998) present an excellent summary of constraints facing agricultural education and training in developing countries. Building on the FAO expert consultation, their paper focuses on the challenges internal to national systems of agricultural education, including aspects of curriculum content and educational processes. They argue that inter-university alliances "offer a means to capitalize on individual university strengths and to reduce costs reflected in the duplication of efforts." Developing countries, however, have no monopoly on problems associated with agricultural education and training.

Improving the Quality of Higher Education in Agriculture Globally in the 21st Century: Constraints and Opportunities presents a case for needed reforms on a global basis. The paper attempts to present a global perspective, including issues pertinent to both developed and developing countries. It examines the comprehensive field of higher education about agriculture and the multitude of disciplines of which it is comprised. It also presents a case for global cooperation in solving problems of mutual and widespread interest.

This philosophical paper is based on recent literature, recent conferences, and the author's observation of agricultural education in roughly 20 countries. While the obstacles are significant at a global level it is certainly true that not all pertain to every country nor are the solutions the same in every instance. It is dangerous to generalize about higher education in agriculture on a global basis because of the tremendous variety of institutions and settings. However, it may be useful to take a global perspective in analyzing several general constraints as a basis for developing alternative solutions appropriate to different settings.

Purpose of Paper

The purpose of this paper is to:

1) present and describe constraints to improving the quality of higher education in agriculture globally in the 21st century;

2) present opportunities for dealing with these constraints; and,

3) urge action in moving forward aggressively on an individual institution level as well as a global, cooperative basis to make needed changes.

Constraints and Opportunities

Lack of Global Cooperation

The current landscape of cooperation among entities engaged in higher education in agriculture is a "patchwork" rather than a network. The patterns of this cooperation are easily legible. First, national and regional cooperation is fairly well defined. Examples include AMEAS (Asociacion Mexicana de Educacion Agricola Superior) in Mexico, the Board on Agriculture of the National Association of State Universities and Land Grant Colleges in the United States, and the European Inter-university Conference of Agriculture and Related Sciences. These voluntary associations are composed of institutions engaged in higher education in agriculture. They share information and collectively offer advice on national policy and budget matters. Such cooperation exists in Africa on a sub-regional basis in organizations such as the Southern Africa Development Conference. South-south linkages have been slower to develop but are now growing steadily.

Second, many professional and disciplinary organizations are open to members worldwide. However, true global cooperation is limited by distances and costs associated with attendance at meetings. For example, the International Association of Agricultural Economics attracts professionals from around the world. However, participants from Western Europe and North America account for the majority of attendees at IAAE conferences. Representation of developing countries is limited, another example of the inadvertent exclusion of some systems from global cooperation. In a rather ominous, cautionary note, Alex McCalla (1998) states that those who are not part of the global system will be left behind.

Third, there are a number of international or multilateral agencies engaged in serving higher education in agriculture, either directly or tangentially. However, specialized mandates and missions can constrain true global cooperation. For example, the U.N. Educational, Scientific, and Cultural Organization (UNESCO), focuses on education in developing nations but not on agricultural education. The Food and Agriculture Organization of the United Nations (FAO) focuses on agriculture – including agricultural education - but only in developing nations. The Organization for Economic Cooperation and Development (OECD) has an interest in higher education but works principally with its members in industrialized nations.

This "patchwork" of organizations and jurisdictions is inadequate in supporting cooperation on a global, multi-region basis inclusive of both developing and developed countries. Such benefits as inter-university student and faculty mobility, curriculum sharing, and cross-fertilization of thought improve with the scale of interactions offered by global university cooperation. With the development of communication technology, is a truly global association now feasible? It could be argued that it is both possible and essential.

Educational Nationalism

Provincial or nationalistic views of systems of higher education in agriculture are a significant constraining force in the improvement of these systems. Too frequently, there is a tendency to believe that "our approach is best." While pride of ownership can be a powerful, positive force, it has often led to isolation and insularity of national education systems. The fallout from such inward looking systems may include poor programmatic articulation between national systems, constrained international mobility of students among systems, duplication of curriculum development efforts, and the professional inbreeding that occurs when generation after generation of faculty are trained in the same system. Such agricultural education systems earn themselves a name used by Professor Vernon Ruttan: "island empires" - institutions unable or unwilling to build bridges to learn from other systems.

One simple example relevant to agricultural education and extension professionals at this conference illustrates how professional organizations could lead the process of uniting "island empires." The example relates to the minimal exchange of scholarship between the US-based Association for International Agricultural and Extension Education (AIAEE) and European agricultural and extension education professionals. There are surprisingly few AIAEE members who attend European professional meetings such as the European Seminar on Extension Education. There are few Europeans who attend AIAEE. There is too little coordination between the AIAEE's Journal of International Agricultural and Extension Education and The Journal of Agricultural Education and Extension (formerly the European Journal of Agricultural Education and Extension). Professor Jet Proost at Wageningen Agricultural University is the editor of the latter journal and has made a special effort to visit the US, solicit papers from US-based scholars and to lead the name change to make the journal more global. Ideas such as a joint annual issue, advertising of US, European and other relevant conferences in both journals, and possibly a joint meeting of the two groups, are relatively easy to organize and will help to reduce the isolation of these two professional groups. In the age of global communication, this is no longer as complicated as brain surgery.

Sources of Knowledge

Every scholar dreams of international recognition for his or her major research breakthrough. Unfortunately, too many of us get carried away hoping for uniqueness without thoroughly testing for uniqueness. We need to teach our students (and to show by example) that good scholarship means working to uncover prior accomplishments by other researchers and "doing our homework" in searching the literature. But the dream to pioneer a new concept, approach or understanding can be achieved. We need to counsel our students in their research efforts to measure what counts, not just to count what can easily be measured. The shelves are full of studies that counted something easily accessible but virtually without scholarly significance. We need to measure what counts and to publish in internationally accessible journals soothers can build on our work.

Another dimension of the question regarding sources of knowledge pertains to an under-recognized source within society. Typically, we rely on research-based information generated by scientists to fill our lectures, textbooks and extension bulletins. But let us consider a different paradigm related to sources of knowledge. Indigenous knowledge systems are crucal in informing practitioners about the accumulated wisdom of individuals and families involved directly in cultivating the soil and in animal husbandry. Indeed, the combination ofthese two types of information can form a much more global and holistic view of the subject natter of agricultural disciplines. (Warren, 1991; Scott, 1998)

Globalization of Educational Content

Agribusinesses operate in a global market and require a workforce prepared to work globally. Globalization of the substance of the student learning experience is a key pathway to preparing a global workforce. Educators in the field of agriculture need to operate with an expanded frame of reference to ensure a balance of domestic and international educational content. In a recent commentary Acker and Scanes (1998) argue that all learning for agriculture students should include global dimensions to prepare for global careers, to enhance appreciation for diversity, and as a key element in a quality education. The initiative called Globalizing Agricultural Science and Education Programs for America (GASEPA, 1997) reinforces a similar viewpoint. The American Council on Education (1998) states that "the United States needs many more people who understand how other peoples think…" The report goes on to say that university education "has a leadership role to play in developing a globally literate citizenry and workforce." Simply stated, global skills, global perspectives, and global citizenship are now a fundamental prerequisite for success.

Gender Imbalances

Although there are some notable exceptions, women are generally underrepresented among students in agriculture programs, particularly at higher education levels. This is especially true in certain African countries (Acker, McBreen & Taylor, 1998). The same problem, not surprisingly, is also true among faculty ranks in agriculture disciplines.

Greater levels of participation by women in higher education in agriculture can yield a variety of benefits to society. Among these are the establishment of a greater pool of highly trained women in agriculture to lead policy reform, research, education, and development planning efforts that reflect the specific needs of women and families.

Have we fully understood why these fields are unattractive to women? Have we made the necessary changes to encourage a better gender balance in our students and faculty members? Have budget priorities among international donors and university administrators followed the extensive rhetoric on this issue? Food security and population control, especially as evidenced in sub-Saharan Africa, benefit from better educated women.

Narrow Disciplinary Approach

Agricultural education systems are largely organized around disciplines and many of those disciplines have long histories and traditions. Yet, problems in the real world do not normally present themselves in neat disciplinary boxes. Are we training broad thinkers to be problem solvers or technicians who have mastered a specific body of knowledge? Van Crowder (et al., 1998) share this concern.

A narrow definition of agriculture leads to a narrow interpretation of what is appropriate in an agricultural education program. In some institutions agriculture is defined largely in terms of plant and animal production while at others the social activity inherent in agriculture is more widely recognized. In this process of learning, students need to examine agriculture from a systems perspective. How successful are we at balancing agriculture students' learning experiences? There is a growing consensus that agriculture students study too little in the areas of foreign languages, policy, ethics, communication, social sciences, and the environment. However, required classes in a student's discipline often fill a significant portion of their undergraduate programs. A B.S. program may require five or six years to complete.

Are we really preparing students for the world of work of tomorrow when graduates will have multiple careers? Are we teaching students a series of facts or are we teaching them how to learn so that they can be ready for a sequence of different careers during their lifetime? Strong cases have been made for moving more aggressively away from memorization of facts and a reductionist approach. These approaches are being replaced by an increase in real life experiences, experiences that teach students how to learn throughout their lives and careers and to present a more systems oriented, holistic view of agriculture.

Capstone courses exist and help to bring together thinking from a number of lines of inquiry under a single offering for upper class students. Opportunities exist for developing entry-level systems oriented courses to give entering students a framework on which to "hang" knowledge obtained in later courses. It is significant that the Kellogg Foundation's thrust to reform agricultural education uses the phrase "food systems professions" suggesting a very broad view of the soil-to-table continuum.

Such changes in approach can be effectively developed in conjunction with private sector business and community partners. Private sector partners can contribute vital content suggestions, and provide internships and other opportunities. Agriculture employers continue to ask for students who can communicate effectively, solve complex problems efficiently, and to work in teams harmoniously. Are we leaving enough time in students' programs to permit significant experiences in these areas.

Narrow Definition of Scholarship

In university systems there is a tendency to equate scholarship with the processes and products of research endeavors. In the United States, "research universities" are roughly patterned on a Germanic model in which research productivity has traditionally been a key indicator of professorial performance. In other countries, the relative worth of research contributions in recognition schemes depends on the traditions or model of education emulated by the institution, its role in society, and whether graduate education is offered and research emphasized.

An emerging notion promotes the view that scholarship can take many forms. Ernest Boyer, in his book *Scholarship Reconsidered: Priorities of the Professoriate* worked from the premise that "to sustain the vitality of higher education in *our* time, a new vision of scholarship is required, one dedicated not only to the renewal of the academy but, ultimately, to the renewal of society itself" (Boyer, 1992). Boyer suggested that we recognize the scholarship of teaching, discovery, integration and application. In his typology, the scholarship of discovery is that form of scholarship we often call basic research and equate with scholarly productivity. But Boyer presents a convincing case for recognizing the scholarship of achievement in teaching, in endeavors related to the integration of knowledge from disparate sources to provide new understandings, and in the creative application of knowledge in extension work. Reform efforts need to come to grips with this question if institutions are to balance the reward structure among those involved in research, extension, and teaching activities. Healthier, more balanced institutions should evolve from this process.

Conclusions

This paper concludes that higher education in agriculture suffers from myopic views of its role in the societies it serves and its role in the global change processes in which it could exercise considerably greater leadership. Professional agricultural educators need to think strategically about what needs to be accomplished to prepare human resources required for feeding the world's population and protecting its environment in the 21st century, and, where necessary, be prepared to shed traditions that constrain the professions. Making major improvements in the quality of higher agricultural education worldwide will depend on a variety of interrelated changes. Some changes will require efforts at the individual institution level while others will require global cooperation heretofore unknown in the field.

The myopia of higher agricultural education systems is curable. There is a continuing need to re-invent and reform to remain current, relevant and effective. We need to be both global and local in all that we do in agricultural education. There is a case for global cooperation as a driver in this process of improving higher education in agriculture. Such cooperation can help speed the pace of reforms and to enrich the process as new ideas are borrowed from other systems.

Mutual improvement of the education system should be the aim of global cooperation; the aim should not be to develop some form of centralized global control. The history of distant or central control of educational content and processes is filled with many examples of failures. In the recent book by James Scott "Seeing Like a State" the point is made that centrally planned economies attempt to homogenize societies to make them easier to administer. Efforts to globalize agricultural education curriculum could easily fall victim to the same homogenization and standardization. A different approach has been taken in the European Union. Their efforts to align and harmonize curriculum and credit transfer (European Credit Transfer System) have worked to avoid homogenization and standardization.

There is currently a window of opportunity for global cooperation in solving problems outlined in this paper. Major conferences were held in 1998 in Argentina, France, Russia, and Ukraine to examine the topic of reform in higher education. A new Global Consortium of Agricultural Universities, headed by Martin Jischke, President, Iowa State University, was formed in 1998 to forge links among agricultural universities and related agencies worldwide for the purpose of mutual improvement of programs and institutions engaged in human resources development in support of global food security and environmental sustainability. Further information may be found on the Consortium's web site: http://www.iastate.edu/~gcau/

There are significant implications for the target set at the World Food Summit of 1996. Higher education in agriculture will play a key role in either achieving or failing to achieve the goals agreed to by the world community. The choice is in our hands.

References

Acker, David G., Edna L. McBreen, and Shelley Z. Taylor (1998). Women in Higher Education in Agriculture with Reference to Selected Countries in East and Southern Africa. The Journal of Agricultural Education and Extension, vol. 5, no. 1.

Acker, David G., and Colin G. Scanes (1998). A Case for globalizing U.S. colleges of agriculture. Journal of International Agricultural and Extension Education, vol. 5, no. 1.

American Council on Education – Commission on International Education (1998). Educating for global competence: America's passport to the future. Washington, DC: American Council on Education.

Boyer, Ernest L. (1990). Scholarship reconsidered: Priorities of the professoriate, Princeton, New Jersey: The Carnegie Foundation for the Advancement of Teaching.

Food and Agriculture Organization of the United Nations (1997). Issues and opportunities for agricultural education and training in the 1990s and beyond. Rome: FAO.

McCalla, Alex F. (1998). Agricultural education, science and modern technology's role in solving the problems of global food resources in the 21st century. Paper presented at the conference entitled "Globalizing Agricultural Higher Education and Science: Meeting the Needs of the 21st Century" held at the National Agricultural University of Ukraine, Kiev, Ukraine, September 28-30, 1998.

National Association of State Universities and Land Grant Colleges, International Agriculture Section (1997). Globalizing agricultural science and education programs for America. Washington, DC: NASULGC

Scott, James C. (1998). Seeing like a state. New Haven: Yale University Press

Van Crowder, L., W.I. Lindley, T.H. Bruening, and N. Doron (1998). Agricultural education for sustainable rural development: Challenges for developing countries in the 21st century. The Journal of Agricultural Education and Extension, vol.5, no.2.

Warren, D. Michael (1991). Using indigenous knowledge in agricultural development, World Bank Discussion Paper # 127. Washington, DC: World Bank.

Session M Organizational Leadership

March 23, 3:30 - 5:30 p. m.

Session Chair - Dunstan Campbell

Location: St. Ann's Room

TITLE: Extension Tomorrow - A Case Study of Organization Change in the North Carolina Cooperative Extension System with Implications for International Agricultural and Extension Education Systems.
AUTHOR: Ronald W. Shearon, Sr.
North Carolina State University
DISCUSSANT: Burt Swanson

TITLE: Revisiting Extension's 4-H Recruitment and Retention Plan in West Virginia
AUTHOR: Gary J. Wingenbach
West Virginia University
DISCUSSANT: Burt Swanson

TITLE: Extension Organizational Factors that Influenced American Participants in the Polish/American Extension Project
AUTHOR: Nancy E. Crago, Donald E. Evans
The Pennsylvania State University
DISCUSSANT: Gary Wingenbach

TITLE: Establishing a Network for Collaboration Across Latin America: A Partnership between the Texas A&M University System and the Inter-American Institute for Cooperation on Agriculture
AUTHOR: Kim E. Dooley, Theresa Murphrey
Texas A&M University
DISCUSSANT: Gary Wingenbach

Extension Tomorrow - A Case Study of Organization Change in the North Carolina Cooperative Extension System with Implications for International Agricultural and Extension Education Systems.

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Abstract

Agricultural and Extension Administrators are turning to internal and external organization development (OD) consultants to help initiate processes for making needed improvements in the systems they administer. This paper suggests a six step participatory action research process OD intervention. A case study of organization change illustrates the successful use of the model in making some major improvements over a three year period. Implications for international systems are included.

Introduction

Administrators of public Extension Systems like leaders of all organizations today are being challenged to provide better, faster and cheaper programs, products and services (Byrne 1998, Spector 1995). This era of high accountability for publicly funded government programs is demanding more results and impact data to show societal relevance. In a recent lecture at North Carolina State University, a U.S. Department of Agriculture official emphasized the declining public support for federal subsidies for agriculture as an industry (Gonzalez, 1998). With only about 2% of the U.S. population living on farms, the other 98% of citizens will continue to question the need for the government to support subsidies and to support publicly funded research and extension programs for this industry.

With recognition of changing societal dynamics, Extension Administrators in North Carolina have demonstrated great interest in positioning Extension for a successful future. Like administrative leaders in other organizations today, these Extension administrators turned to organization development (OD) specialists on their staffs and hired external consultants to engage in organization analysis and development.

There is a significant and an increasing body of literature on organization development. These OD specialists tend to use behavioral science interventions for organization improvement. French and Bell (1984) suggest that OD is a top-management supported, long-range effort to improve the organization's problem-solving and renewal processes, primarily through a more effective and collaborative diagnosis and management of the organization culture. French and Bell (1984), Scott and Jaffe (1989), Shearon and Brownlee (1991), and Selener (1997) suggest a highly participatory action research process to achieve and manage organization change.

The basic intervention model in OD is action research and the process consists of (1) a preliminary diagnosis, (2) gathering data and preliminary analysis, (3) data feedback to client group, (4) joint diagnosis and validation, (5) action planning, and (6) action by the client organization.

Purpose

The purpose of this paper is to briefly describe and analyze the participatory action research process being used in the North Carolina Cooperative Extension System (NCCES) to bring about needed organization changes, and its application to other Extension Systems. Specifically, this paper will present some of the diagnostic findings from studies conducted by external consultants Broer and Hauser (1996) and the actions planned, taken and evaluated by the Extension System over the past three years.

Methods and Data Sources

An internal organization development advisory committee of five people was appointed by the top NCCES Administrators to work with external consultants as needed. The author of this paper served as chair of the internal advisory committee and this experience was a major source of some of the data and interpretations. The author currently serves as an advisor to an "Extension Tomorrow Team," that has been charged to stimulate actions on needed organization improvements and celebrations as appropriate in the NCCES.

During the organization diagnosis, feedback and action intervention phases of this ongoing organization change process, a combination of data gathering and survey feedback techniques were utilized. Fifty-one confidential one-on-one "sensing" interviews were used to gather data from key leaders in the universities, county governments, commodity/production agriculture, local Extension advisory groups, and other leadership in state government. The same protocol of questions were used in all interviews.

Eight focus groups were used to gather data from 5 to 20 people participating in each group. Two survey instruments were designed to gather data from some 1200 employees on strategy, structure, culture innovation, customer impact, leadership and organizational climate. Approximately 835 of the 1200 employees responded to the survey instruments.

Results

The results will be presented sequentially to reflect the participatory action research process.

STEP 1. Preliminary Diagnosis

The Director of Cooperative Extension had been in the position for less than a year and he wanted an assessment of the problems and opportunities facing the NCCES organization.

Extension administrators and agents were continuing to hear concerns from farmers and from families regarding the organization's name change from "Agricultural Extension" to "Cooperative Extension." In today's world of large production agriculture units vs. small farms, Extension has been struggling to redefine itself, its mission and its future. Administrative leaders have been moving the organization and its programs in new directions to be more inclusive of a larger customer base of people who do not live on farms or have farm backgrounds, while continuing to serve the needs of the declining traditional agriculture customer base.

STEP 2. Gathering Data and Preliminary Analysis

Some of the questions posed with the major findings resulting from the data gathering process are as follows:

In what kind of world does the NCCES live? It is a world of changing customers who are moving from a rural to an urban mentality, a world of agribusiness and fewer small family farms, of information technology that spans state and county lines, of high taxpayer accountability, and of decreasing government funding.

Therefore, what are the products/services of the NCCES? The NCCES must learn to prioritize its products and services, to be in the businesses its customers demand, and to make impacts where the taxpayer will value its efforts. There may be chances for alliances with other agencies, for new and innovative products and services, and for exiting some activities. Hard choices will need to be made.

Therefore, what is an appropriate strategic plan? The strategy of the NCCES must be based on a *vision* of the future, knowing which *customers* it wants to serve and why. Understanding and keeping what is excellent in the organization and moving into a newly envisioned future will not be easy. The *strategy* provides overall direction, but the operational plans and implementation must come from the NCCES leadership. If that leadership is not united about the vision and direction, the strategic plan will fail or not reach a full measure of success.

Therefore, how should the NCCES be organized? The structure should be guided by a strong customer focus. Each position must answer the question, "How do I best serve our customers?" The organization chart must be judged from the perspective of the customers, who care nothing for organizational politics.

Therefore, how can NCCES professionals manage/lead to meet customer needs? The customer must become the central focus of activities. Energies currently focused on internal issues need to be redirected to an external focus. In a changing environment, flexible, quick responses will be necessary. Becoming an organization dedicated to learning from its own experiences will increase not only responsiveness but knowledge.

Recommendations by OD Specialists

Based on the findings, the external OD consultants made the following eight major recommendations:

Customers. The NCCES needs to establish an improved customer focus. Programs and services that were once valued may need to change. Everything must be measured in terms of its value to customers. The existing internal focus of NCCES needs to shift to an external, customer-oriented focus.

Competition. NCCES faces strong competition for customers and funding. It needs to assess the competition, determine its competitive advantages and disadvantages, and adjust its programs accordingly, dropping some, expanding others, and test-marketing some new ones. Alliances with other organizations should be explored.

Marketing Research. Studies have shown that NCCES is not well understood or widely used by most people. Marketing professionals are needed to establish and manage the research base needed for a customer-focused strategy.

Impact Data. Along with strong marketing, excellent impact data on programs and services are needed. The NCCES should examine the quality of its data, set standards, and place accountability for data quality firmly with those who do the reporting.

Programs and Services. If Extension's people and services do not meet customer needs, then the organization becomes irrelevant. The energy being directed to internal turf and political issues should be redirected to strengthening program offerings.

Delivery Systems. Extension needs to expand the use of technology for program delivery. Although progress has been made, the future will demand effective, rapid-response methods.

Structure. To become truly customer and program driven, the organization chart needs to be reinvented with the customer at the top. Every position must become "value added" to customers, and leadership roles should center on customer and program focus.

Communication. Extension needs to improve its communications with internal and external audiences. Messages about such matters as the strategy, structure, budgeting process, and program changes must be communicated clearly and regularly. Both customers and insiders need ways to "talk back" and be heard.

STEP 3. Data Feedback to Client Group

These studies were completed in the fall of 1996 in time for major presentations to all Extension Agents and Specialists attending the Annual November Extension Conference. Final written reports and summaries of findings and recommendations were shared with all Extension personnel. Regional or District meetings were scheduled during 1997 throughout the state of North Carolina for presentations to volunteer leaders and Extension staff for further discussion and feedback. These meetings were well attended and people generally were very supportive of the consultants' recommendations and Extension Administration's plan to help strengthen Extension's position in North Carolina for a positive future.

STEP 4. Joint Diagnosis and Validation

During the November 1996 annual Extension Conference, break out rooms with trained continuous quality improvement facilitators were provided for people to explore the findings. The discussions in these rooms went extremely well. A wall of paper was provided for people to write down their thoughts, reactions and suggestions to the findings and recommendations for how to better position the NCCES for a more positive future. All of these notes were summarized and examined by Extension Administrators, specialist, agents and local volunteer leaders who were the same people involved all along the OD process.

STEP 5. Action Planning

As a continuing process in the fall of 1997, the Director appointed a NCCES Organizational Renewal Team of 16 individuals representing various job groups in the organization. This team's primary task was to continue to initiate and implement strategies for improvement in response to the organization studies. This team later changed its name to "Extension Tomorrow Team" or the ET Team. This team reports directly to the top Administrators in the NCCES.

An Institute for Systems Leadership (ISL) was also conducted during 1996-97 to help teach and inspire more Extension professionals to think "system" and how to lead others to help the NCCES become a learning organization. Senge's (1990) writings on the learning organization was the major reference for participants in the institute. Most of the leadership for the Organizational Renewal Team or the ET Team came from the ISL participants. This ISL/OD connection was not really planned — it just evolved and the two interventions complemented each other very effectively.

STEP 6. Action Taken by Client Organization

The Extension Tomorrow Team gave leadership to summarizing the major issues and actions for the entire Extension Organization from all the data gathered during the past three years. The ET Team identified 13 issues and actions and these were presented during the November 1998 Annual Extension Conference (November 1998).

The 13 issues were: (1) customer focus; (2) competition; (3) marketing; (4) reporting impacts; (5) programs and services; (6) delivery systems; (7) structure; (8) reward system; (9) collaboration; (10) communication; (11) opportunity for input; (12) training and development; and (13) opportunity for advancement. Due to space limitations of this paper, one example of the issue on customer focus and actions taken will be presented to convey the concept.

Customer Focus

Issue

We need to shift from an internal focus to an external, customer-oriented focus.

Actions Taken

-New initiatives, such as the Neuse Education Team, address emerging public issues such as water quality.

-Former NC State University Chancellor Monteith, Chancellor Fox and University of North Carolina System President Broad have visited outlying areas to better understand customer needs and Cooperative Extension's role in addressing them.

-NC State, NC A&T, and the State Extension Advisory Council are creating and implementing dynamic plans that are customer-focused and customer-driven.

Conclusions and Implications for International Agricultural and Extension Education Systems

The participatory action research process is a major organization development intervention for making needed changes in all systems. While system structures, functions and processes may be very different from one agency or country to another, the generic process of a preliminary diagnosis, gathering data and preliminary analysis, data feedback to client group, joint diagnosis and validation, action planning and actions taken by client organizations is applicable to all organizations. All systems must engage in organization renewal to continue to meet customer needs and we need a sound planned change process.

The positive experiences in the NCCES case study suggest that administrators must invest time, resources and expertise in developing its people and organization infra-structure to position their system for a positive future. While a major task of Agricultural and Extension Education Systems is to help get research based information to customers, the leaders need to spend time and energy on developing their people and organization to assure a successful future so we can help our customers with research based information.

The use of external OD consultants is essential to a successful OD intervention. No single individual or group inside the organization can do what external and internal consultants can do together. Inside consultants only will very likely face political postering and pressure to report the positive ideas people report rather than both positive and negative reactions. Negative feedback is essential to change.

Most successful OD programs need a system ready for change. In this case study, the system was ready for change where there was a new Extension Director wanting an assessment of problems and opportunities, some tension over new directions to be more inclusive of customers and a highly motivated group of 30 participants in an Institute for Systems Leadership. These contextual factors converged to help with system readiness for change.

It is imperative that the OD consultant's principle contact person be a highly influential member of the organization. In the case study, the chair of the internal advisory committee was an Assistant Director and member of the Extension Administrative Council. Top management must support and accept responsibility for the OD program.

Both inside and outside OD consultants must have a high degree of access to organization information and people. Collaboration between OD consultants and the client organization must be very open, frequent and honest.

The use of multiple interventions to bring about organization improvements is essential to success in all cultural contacts. Perhaps, the most important implication of all is that the administrative leaders must make decisions to make the recommended and needed improvements in the organization. These actions will clearly demonstrate that someone listened and then did something about the people's concerns. Further, the results of these decisions must be communicated to the entire system.

For those organizations who are willing to make the commitment to self diagnosis and organizational change, the OD process described in this paper is believed to have many implications for OD in all systems and cultures. This process of planned intervention, fact finding, analysis and subsequent actions have indeed had significant positive impacts on the organization and operations of the North Carolina Cooperative Extension System. Such positive applications should have equally satisfactory results in other systems as well. Commitment to the process and sustained follow through are the keys to success.

References

Broer, Eileen and Hauser, Jean G. (1996). Organization Analysis - North Carolina Cooperative Extension Service. Human Dimension, Cary, NC, USA.

Byrne, John V. (1998). "Taking Charge of Change: A Leadership Challenge for Public Higher Education" NASULGC Newsline 7 (10) 9 and 12.

Extension Tomorrow Team (November, 1998). Issues and Actions — A Look at how Cooperative Extension has Addressed Key Organizational Issues. North Carolina Cooperative Extension Service, Raleigh, NC, USA.

Gonzalez, Miley. (June, 1998). Lecturer, North Carolina State University, Raleigh, NC, USA.

Scott, C.D. and Jaffe, D.T. (1989). Managing Organizational Change. Crisp Publications, Inc., Menlo Park, California, USA.

Selener, David. (1997). Participatory Action Research and Social Change. The Cornell Participatory Action Research Network. Cornell University, Ithaca, NY. USA.

Senge, Peter and Others. (1994). The Fifth Discipline and Fieldbook — Strategies and Tools for Building a Learning Organization. Doubleday, N.Y., USA.

Senge, Peter. (1990). The Fifth Discipline — The Art and Practice of the Learning Organization. Doubleday Currency, N.Y., USA.

Shearon, Ronald W. and Brownlee, Irene A. (1991). The Impact of Research Strategies on Planning in Community Colleges. Community/Junior College, 15:147-157, Hemisphere Publishing Corporation.

Spector, Robert. (1995). The Nordstrum Way. John Wiley and Sons, Inc., NY, USA.

Revisiting Extension's 4-H Recruitment and Retention Plan in West Virginia

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Abstract

This purpose of this study was to determine effective recruitment and retention methods for increasing enrollment in the West Virginia 4-H program. The sample consisted of 165 county 4-H club leaders and 55 Extension agents. A total of 115 (52%) usable questionnaires were returned. Participants rated the perceived importance of various recruitment and retention techniques used by 4-H club leaders. The highest rated recruitment techniques were "have exciting and active clubs," "word of mouth," "make meetings/programs interesting and fun," "make members feel welcome," and "allow 4-H members to take active roles in the club." The highest rated retention techniques were "a good county agent, staff, and 4-H leader," "must be pro 4-H," "fun camping programs," "provide praise, motivation, and encouragement," "let older members know how important they are to the success of the club," and "provide efficient and fun meetings, programs, and activities." In-service workshops for West Virginia Extension agents and 4-H club leaders should be conducted on organizing an effective and exciting 4-H club meeting and maintaining a dynamic 4-H club.

Introduction

There is more than 5,000,000 4-H members and more than 37,000,000 former 4-H club members in the USA. 4-H club members participate in activities such as special-interest groups, short-term programs, community clubs, and camping. Special-interest topics include studies in rose culture, model rocketry, or consumer buying. Short-term programs are used to educate youth about various subjects including career choices or bicycle safety. Camping is the most intensive method of interaction with 4-H members. Since campers are exposed to group living conditions and activities, they develop interpersonal skills and self-confidence (Jackson, 1997). Involvement in this experience-centered curricula helps youth develop life skills and prepares them to explore careers (Woloshuk, 1988).

Since 4-H membership is voluntary, some youth choose to participate and some choose to drop out. Norland and Bennett (1993) found that dissatisfaction with participation was highly associated with quitting the 4-H club. Also, 4-H members' feelings of commitment, responsibility, and the skills gained when working with younger members contributed to member satisfaction. Other factors contributing to members' satisfaction included high quality club meetings and positive parental involvement. Parental praise provided a positive impact on older member retention. Peer pressure was considered a great deterrent to participation. Urban and rural youth exhibited no differences in their satisfaction levels. What a 4-H member receives from the experience (feelings and responsibility) may be more important than the actual experience.

Extension educators have speculated that youth in 4-H leave their clubs to participate in other activities. A study of the 4-H program in Indiana showed that youth left the program because they were dissatisfied with club activities (Ritchie & Resler, 1993). The three most frequent reasons for dropping out of 4-H clubs ranged from: 1) boring meetings, 2) involvement with sports, and 3) time needed for jobs. Many participants expressed a need for specific help with projects at club meetings. The dropouts suggested that Indiana 4-H leaders needed more support in programming club activities.

Throughout the history of 4-H, recruitment and retention of youth has been a major factor affecting the success of 4-H groups. Since 4-H membership is voluntary, some youth choose to participate and some choose to drop out. Norland and Bennett (1993) found that 4-H members' feelings of commitment, responsibility, and the skills gained when working with younger members contributed to member satisfaction. Dissatisfaction with participation was highly associated with quitting the 4-H club.

The overall success of a 4-H program depends on the recruitment and retention of members. One measurement of an effective 4-H club leader is the ability to recruit and retain members into early adulthood. A need existed to determine the most effective recruitment and retention methods used by 4-H club leaders and state 4-H Extension agents in West Virginia.

Purpose and Objectives

The purpose of this study was to determine the most successful recruitment and retention methods used to sustain and increase membership in the West Virginia 4-H club program. Specific objectives guiding this study were:

1. Identify recruitment techniques used by 4-H club leaders and Extension agents.
2. Identify retention techniques used by 4-H club leaders and Extension agents.
3. Rank the effectiveness of the identified recruitment and retention techniques.

Research Methods

Descriptive census survey methodology was utilized in this study. The target population and sample consisted of all 55 Extension agents responsible for 4-H and all 165 club leaders in the 55 West Virginia counties.

Data were collected via two surveys mailed to the respondent group. A modified Delphi technique was used to obtain the desired information. In the first questionnaire, 4-H club leaders identified the three most effective techniques used to recruit new 4-H members and the three most effective retention methods used to keep members in 4-H. A response rate of 45% (n=75) was achieved.

A Q-sort committee formulated the second questionnaire. Four members condensed and combined initial responses into statements without altering their original meanings. The second questionnaire was divided into two categories: effective techniques used to recruit new members into the 4-H program and effective retention techniques that keep members in 4-H clubs throughout their teen years. A panel of experts from the agricultural education faculty and Extension specialists at West Virginia University reviewed the instruments for face validity.

The second questionnaire was mailed to 165 club leaders and 55 Extension agents responsible for 4-H. Respondents rated the effectiveness of each strategy identified in the initial survey, using the scale: 1 = not effective, 2 = somewhat effective, 3 = effective, and 4 = very effective.. The final response rate was 52% (n=115), consisting of 37 Extension agents and 78 club leaders. The results should not be generalized to all West Virginia Extension agents and 4-H club leaders. Cronbach's alpha for the instrument was 0.92. Descriptive statistics were used to describe the data.

Results

Each respondent indicated his/her status (4-H club leader or Extension agent), gender, age, and years as a 4-H club leader. Of those responding, 57% of the agents were females and 90% of the leaders were females. The majority of agents who responded were from 46 to 55 years old while 4-H club leaders on average were 10 years younger than agents. Years of experience as a 4-H club leader varied for agents equally among agents, but was concentrated in less, rather than more, years for club leaders (Table 1).

Table 1. Demographics of Respondents

		Agents (n=37)		Club Leaders (n=78)	
		Frequency	Percent	Frequency	Percent
Gender	Female	21	57.0	70	90.0
	Male	15	41.0	7	9.0
Age	25-35	9	24.3	11	14.1
	36-45	8	21.6	31	39.7
	46-55	14	37.8	24	30.8
	56-65	2	5.4	7	9.0
	66+	0	0.0	4	5.1
Years as a 4-H Club Leader	1-5	4	10.8	16	20.5
	6-10	3	8.1	21	26.9
	11-15	3	8.1	16	20.5
	16-20	2	5.4	7	9.0
	21+	5	13.5	17	21.8

Respondents identified 40 distinct techniques they used to recruit youth into the West Virginia 4-H program. Using a four-point scale (1 = not effective, 4 = very effective), respondents rated "exciting and active clubs" (3.70), "word-of-mouth" (3.67), "interesting and fun meetings/programs" (3.59), "make members feel welcome" (3.56), and "encourage member participation and interaction in the club" (3.55) as the most effective recruitment techniques in West Virginia. These results supported an earlier study by Norland and Bennett (1993) in that high quality club meetings increased membership enrollment. Also, Ritchie and Resler (1993) found that youth felt a need to be involved in creating their own experiences.

Table 2. Mean Values for Effectiveness of Individual Recruitment Techniques

	Mean Value		
Recruitment Techniques[a]	Grand	Agents	Leaders
Have exciting and active clubs to entice others to join.	3.70	3.70	3.70
Word of mouth—friends telling friends about 4-H activities.	3.67	3.81	3.60
Make meetings/programs interesting and fun.	3.59	3.70	3.54
Make members feel welcome.	3.56	3.60	3.54
Allow 4-H members to participate and take active roles in the club.	3.55	3.54	3.55
Provide recognition and support to all members.	3.46	3.27	3.55
4-H camps: state and local.	3.45	3.35	3.50
Make members and perspective members feel important.	3.43	3.49	3.40
Have regular meetings.	3.40	3.24	3.48
Skating/swimming parties, hay rides, lock-ins, exhibits, and other activities.	3.40	3.35	3.42
A club having and maintaining a good reputation in the community.	3.39	3.32	3.42
Be seen and known; be an active club involved locally and at the state level.	3.31	3.41	3.27
Have members invite friends/siblings to meetings/activities.	3.31	3.38	3.27
Treat members as individuals and adults.	3.30	3.36	3.27
Have a convenient location and time for meetings.	3.22	2.87	3.39
Parents are encouraging their children to join due to their former involvement.	3.21	3.27	3.18
Keep programs interesting with age appropriate activities.	3.19	3.08	3.24
Participate in community service projects.	3.08	2.97	3.13
Create annual strategy plan; organize and plan activities to increase interest.	3.04	2.97	3.07
Show your members you are interested in the club and be active at public events.	3.03	2.78	3.15

Note. Scale values: 1 = Not effective; 2 = Somewhat effective; 3 = Effective; 4 = Very effective.
[a] To conserve space, 20 other recruitment techniques were rated but are not included in Table 2; all were rated <3.00.

Respondents identified 33 distinct retention techniques they used to keep youth in the West Virginia 4-H program. Using the same scale, respondents rated "pro 4-H agents and leaders" (3.65), "4-H camping program" (3.63), "providing praise, motivation, and encouragement" (3.60), "convincing older members of their importance to club success" (3.55), "providing efficient and fun meetings, programs, and activities" (3.53), and "listening to members' inputs and needs" (3.51) as the most effective retention techniques in West Virginia. These data support Norland and Bennett (1993) who found that an individual's feelings of commitment, responsibility, and the skills gained when mentoring younger members were factors that influenced older member satisfaction.

Table 3. Descriptive Statistics for Effectiveness of Individual Retention Techniques

	Mean Value		
Retention Techniques[a]	Grand	Agents	Leaders
A good county agent, staff, and 4-H leader; must be pro 4-H.	3.65	3.51	3.72
An effective 4-H camping program.	3.63	3.65	3.62
Provide praise, motivation, and encouragement.	3.60	3.54	3.62
Let older members know how important they are to the success of the club.	3.55	3.68	3.49
Provide efficient and fun meetings, programs, and activities.	3.53	3.35	3.62
Listening to members' inputs and needs.	3.51	3.43	3.55
Being a friend, communicating and understanding.	3.46	3.46	3.46
Keep meetings at the same time; be consistent.	3.43	3.35	3.47
Give older 4-H members extra responsibilities.	3.42	3.68	3.30
Friends and family being part of 4-H.	3.40	3.46	3.37
Use older members as mentors.	3.36	3.49	3.30
Awards that recognize members for their achievements.	3.33	2.94	3.51
Keep everyone involved in the 4-H club.	3.32	3.05	3.45
Provide equal opportunities for all.	3.31	3.11	3.41

Note. Scale values: 1 = Not effective; 2 = Somewhat effective; 3 = Effective; 4 = Very effective.

[a] To conserve space, 19 other retention techniques were rated but are not included in Table 3; all rated <3.30.

Educational Importance

The single most important factor related to effective recruitment and sustained retention of West Virginia 4-H members can be attributed to the Extension agent and/or 4-H club leader. Based upon the findings of this study, the West Virginia University Extension Service must consider developing a statewide plan for recruiting and retaining members in the 4-H program. The foundation of this plan should center on assisting 4-H agents and leaders develop a proactive, positive, and supportive attitude towards the 4-H program and its members. The statewide plan should include long-term examination of recruitment and retention techniques used by agents and leaders, as societal changes and demographic shifts affect future 4-H programming.

4-H club leaders and Extension agents must remember that youth will continue to view 4-H activities as fun and connected with the society in which they live. To assure this philosophic stance, Extension agents and club leaders need to promote teamwork between themselves and 4-H members alike. All participants should encourage each other to try innovative ideas. Extension agents and 4-H club leaders should give each other praise, motivation, and encouragement, while both should give members the same.

Inservice workshops for Extension agents and 4-H club leaders should be conducted on organizing effective and exciting 4-H club meetings. 4-H club leaders would benefit from workshops concentrating on the creation and maintenance of a dynamic 4-H club. Further study should be conducted to learn which recruitment and retention techniques may influence non-members to join 4-H.

References

Jackson, T. (1997). Ways to participate in 4-H. University of Illinois. [On-line] http://www.ag.uiuc.edu/~fourh/clover/PARTICIP.HTM

Norland, E. & Bennett, M. (1993). Youth participation factors related to older member satisfaction with 4-H. Journal of Extension, 31, (1) [On-line serial]. Available email: almanac@joe.ext.vt.edu

Ritchie, R. & Resler, K. (1993). Why youth drop out of 4-H. Journal of Extension,31, (1) [On-line serial]. Available e-mail: almanac@joe.ext.vt.edu

Woloshuk, J. (1988). Profile of West Virginia national 4-H awards program participants from 1967-1980. Unpublished doctoral dissertation, West Virginia University, Morgantown.

EXTENSION ORGANIZATIONAL FACTORS THAT INFLUENCED AMERICAN PARTICIPANTS IN THE POLISH/AMERICAN EXTENSION PROJECT

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Abstract

This study described the extent of personal and professional impact on the American Extension professionals who served as advisors for the Polish/American Extension Project and Extension organizational factors that influenced that impact.

Study results show American Extension professionals perceived the impact from their participation was extensive for themselves and moderate for their family members and colleagues and clientele. Qualitative data analysis confirmed change in knowledge, opportunities, skills and aspirations, practices and outcomes using the Bennett and Rockwell Targeting Outcomes of Programs (TOP) Model. Overall, the American Extension professionals were very satisfied with their assignment, indicated they would definitely recommend an international assignment to others in Extension, and would consider another international assignment for themselves, involving their family members.

Positive relationships were found between participant attitudes about Extension organizational support for international and overall influence, personal influence, professional influence, overall satisfaction, extent of change and number of outputs. Overall influence was positively related to local office support and number of outputs. The American Extension professionals' perceptions of the organization's attitude toward international was positively related to overall influence, professional influence and number of outputs. Negative relationships were found between prior international experience and extent of change, overall satisfaction, and overall impact.

Introduction

From 1991 through 1995, land grant universities cooperated with the Extension Service of the United States Department of Agriculture (ES-USDA) to provide staff who served as advisors for the Polish/American Extension Project, a model grassroots developmental assistance program (Ragland, 1995). This project was unique from Extension's role in previous developmental assistance programs in the project design and characteristics of the American advisors. It was similar to previous programs in that the goals established and resources provided primarily focused on targeting outcomes that would benefit Polish people and their country with little if any focus on benefits to Americans. Although project objectives did not target outcomes for the American participants or the organizations they represented, many of the American Extension professionals commented about the professional and personal impact of their experience (Beck, 1998).

The concept of foreign assistance is changing from that of foreign aid to developmental cooperation (Smuckler, Berg, & Gordon, 1988). Goodwin and Nacht (1991) noted a weakness of funding organizations involved in developmental assistance has been their failure to develop goals that focus on benefits to Americans. Scott (1990) noted Americans lack knowledge of other cultures and foreign policy issues and sometimes do not appreciate their own international agencies and foreign policy issues. In 1984 the International Task Force for the Extension Committee on Organization and Policy (ECOP) outlined goals for inte-grating an international dimension into all Extension programs (USDA, 1989). One characteristic identified by Ludwig and Barrick (no date) that is critical to an inter-nationalized state university Extension system is that the clientele have a basic understanding of global and national interdependence. Because of diverse back-grounds of the American advisors for the project, their geographic distribution across the United States and their competence in involving family members and others with their participation, this was an opportunity to document the extent of impact on them and the organizations and communities they represented and study Extension organizational factors that positively or negatively influenced that impact.

Purpose of paper

The purpose of this paper is to describe the extent of personal and professional impact on the American Extension professionals who served as advisors for the Polish/American Extension Project and organizational factors of the United States Cooperative Extension System that positively or negatively influenced the extent of that personal and professional impact.

Methods and data sources

Theoretically driven by the quantitative method, this study included a complimentary qualitative component. The direct experience of this researcher as one of the American advisors for the project was an opportunity to bring personal knowledge and understanding of the organizational context in which the Extension organization operated to the research setting. Feedback with study participants, self-examination and cross-checking with fellow researchers to distinguish her own perceptions from those of others was used to report study results in a fair, balanced way. Data for this research were obtained from instruments designed and developed with a team of three other individuals for an overseas technical cooperation impact study (Andrews, Evans, Crago, & Place, 1998).

Quantitative data were obtained using a mail questionnaire administered to the population of 70 American Extension professionals who served six month or longer assignments. Response rate was 95.7%. Sources of qualitative data were responses to open-ended questions on the mail questionnaire and interviews con-ducted by the research team with 12 of the American Extension professionals and 88 of their near associates at eight state sites. The sites were selected by random sampling the 26 states from which the Extension professionals came. American Extension professionals interviewed at these sites were chosen for maximum variation of characteristics. Once selected, they helped identify near associates who included administrators, supervisors, colleagues, staff members, clientele, and family members. All data were recorded by hand-writing responses in interview guides. Data from all interviews at five state sites were also tape recorded.

Cronbach alpha scores for reliability of nine scales created to measure variables of impact and ten scales created to measure variables of Extension organizational factors ranged from acceptable to good (.69 to .92) and all items had strong correlations with the totals.

Quantitative data were analyzed to obtain frequency distributions and measures or central tendency and variance. Correlation procedures used were the point-biserial technique and Pearson product-moment correlation. Responses to open-ended questions from the questionnaire and interview data were analyzed qualitatively following guidelines described by Tesch (1990). Themes and patterns were triangulated within each state site, then across state sites and merged with results of the quantitative analysis.

Results

Personal and Professional Impact

Extent of Change. Generally, the American Extension professionals experienced moderate change as a result of their assignments (M=30.94/4.40; item mean=3.09, on 10 item scale with values ranging from 1-No change to 4=Extensive change).

Overall Influence. The American Extension professionals' perceptions of the overall influence of the assignment was neutral to slightly positive (M=31.53/4.80; item mean = 3.92, on 10 item scale with values ranging from 1=negative influence to 5=positive influence). They believed the influence of the experience was slightly greater in their professional life (M=20.15/3.21; item mean = 4.00) than in their personal life (M=7.61/1.90; item mean = 3.80). Positive professional influences noted in the qualitative analysis included a broadened range of experiences, additional experiences for self and others in Extension, and change in program emphasis. Negative professional influences described included the experience opened doors extension was unwilling to let them develop, dissatisfac-tion and boredom with the job upon return, the experience came at the climax of their career, no positive interest shown by the Extension organization and lack of recognition of their experience by the extension organization in evaluation, and having to relocate upon return.

Participants who described the experience as being personally positive noted it brought the family closer together, it was an opportunity for the family to live and work abroad together, to learn about and respect a culture different from their own, and to broaden their perspectives. Other participants noted negative personal influences of being out of contact with children's development, missing family celebrations and being absent during times of crisis.

Number of Outputs. The American Extension professionals reported some integration of the experience into their work at home (M=27.64/8.43; item mean = 2.75 on ten item scale with values ranging from 1=none to 5=16 or more).

Overall Impact. The American Extension professionals perceived the overall impact of their participation in the project was extensive (M=8.53/1.38; values ranged from 0=No impact to 10=extensive impact). Analysis of qualitative data provided evidence of impact at all levels of the TOP Model.

The American Extension professionals learned about the country of Poland and Eastern Europe and expanded their knowledge of international issues and diplomacy. Their knowledge and understanding of the U.S. Extension system and other types of Extension systems increased. They experienced the effects of life under Communism and developed appreciation for America and democracy. Their perspective of America's role in world affairs changed. They increased their tolerance of other cultures. Administrators and colleagues noted they "returned with a different and broader perspective" and "gained increase respect from coworkers and clientele". The American Extension professionals said they improved their people skills, skills in working in teams, and communication skills.

American Extension professionals were asked to estimate the number of linkages created/maintained in Poland as a result of their experience. An average was obtained for each response. When all responses were totaled, the number of linkages reported was 531, an average of eight per person.

Impact on family members. The American Extension professionals' perception of how the experience impacted the family was generally above moderate (M=6.79/2.78; values ranged from 0=No impact to 10=extensive impact). Analysis of the qualitative data suggest that the American Extension professionals may have been modest in estimating the extent of impact on family members. Family members who visited or lived in Poland became involved in Polish life and activities. Several family members also volunteered to work in the project. School-aged children attended Polish schools and learned to speak Polish. Older children who participated have been motivated to do more international travel and some have even chosen career paths with an international emphasis.

Family members who stayed at home talked about the difficulty in communicating with the persons in Poland. Communication was usually done through letters that could take as long as two weeks to arrive. Three spouses who did not live in Poland described the experience as stressful or lonely.

Impact on colleagues and Extension audiences. The respondents believed their colleagues and Extension audiences were also moderately impacted (M=5.20/2.93; values ranged from 0=No impact to 10=extensive impact), but slightly less than family members. Findings in the qualitative analysis indicated that, overall, the American Extension professionals' involvement in the Polish/American Extension Project served to increase the awareness of international within the Extension organizations they represented and influenced others within Extension to develop interests and activities internationally.

Extension audiences especially were impacted by many presentations delivered by the American Extension professionals when they returned home. Since that time, there have been opportunities for Extension audiences to interact with Polish visitors who have traveled to those state sites that have established interactions, study tours or exchanges with Poland.

Overall Satisfaction with Assignment. Overall, the American Extension professionals were very satisfied with their assignment (M=9.29/1.02; values ranged from 0=Very dissatisfied to 10=Very Satisfied). When asked if they would recommend an international assignment to others in Extension, the response was definitely (M=4.74/.73/Mdn.=5; values ranged from 1=Would not consider it to 5=Definitely).

Extension Organizational Factors

Attitudes of the Extension organization toward international. Responses to nine items on this scale showed the American Extension professionals' perceptions of the attitudes of their Extension organization toward their participation in the project ranged from slightly negative to slightly positive (M=4.00/6.90; item mean=.49, on a nine item scale with values ranging from -2=Very negative to +2=Very positive, with 0=Not sure as midpoint. Participation was viewed positively by administrators and supervisors as a professional development opportunity. The American Extension professionals were positive about their experience, but they did not always perceive the state Extension organization also viewed it as positive. Some of the reasons for this perception were the lack of recognition from the state organization for their participation, a feeling that the accomplishments were not recognized in subsequent performance appraisals, not being asked to share the experience with colleagues, and the inability to have opportunities to apply newly developed skills.

Extent of local office support. Support at the local level was generally positive. Those who showed some resentment included county agents and farmers worried about having specialist support and agents who assumed responsibilities. Clientele were generally positive about American Extension professionals' participation as long as their needs continued to be met. They had a sense of pride that someone they knew was on assignment and it became easier for them to relate to U.S. Involvement in foreign assistance when it became "personal".

Local organization's experience in international. It was perceived that local Extension organizations had little experience in international (M=19.31/7.35; item mean=1.93 on 10 item scale with values ranging from 1=no experience to 4=extensive). Indicators of Extension organizational experience in international reported by respondents came from hosting international visitors (M=2.47/.93), individuals on international assignments (M=1.96/1.16), and involvement of foreign students (M=2.14/1.01). Areas respondents perceived the organization had no experience in were integrating international dimensions into POWs (M=1.65/.94), individuals who had traveled internationally as part of their extension role (M=1.77/.94), staff development activities in international M=1.61/.80), and individuals on international assignments M=1.96/1.16).

Participant attitudes about organizational support for international. Overall, American Extension professionals perceived it is important for state Extension organizations to provide support to university based and county based Extension professionals for international involvement (M=12.16/2.40; item mean= 3.28, on four item scale with values ranging from 1=Not important to 4=Very Important). Qualitative analysis showed participants and some coworkers and supervisors were dissatisfied with the organizational support for international. They indicated they would like to see more encouragement and outward support from administration for participation in international. Administrators indicated they were supportive of international involvement and some even described themselves as encouraging. Limiters to participation described by administrators included covering on-going activities and initiatives, lack of ability to meet the level of expertise requested for participation in some of the projects, and negative peer attitudes.

Correlation results

Table 1 contains the Pearson product-moment correlation coefficients calculated to describe the relationships between seven measures of impact and four Extension organizational factors.

Table 1. Pearson Product-Moment Correlations Between Measures of Impact and Extension OrganizationalFactors.

	Measures of Extension Organizational Factors			
Measures of Impact	Extent of Local Office Support	Organizational Attitudes Toward International	Local Extension Organization's Experience in International	Participant Attitudes about Organizational Support for International
A. Overall Influence	0.33* *	0.36**	-0.08	0.33**
B. Number of Outputs	0.28* *	0.29**	-0.01	0.47** *
C. Influence Professionally	0.20	0.29*	-0.11	0.30*
D. Extent of Change	0.03	-0.11	-0.26*	0.28*
E. Influence Personally	0.33* *	0.21	-0.10	0.33**
F. Overall Satisfaction	0.07	0.01	-0.03	0.30*
G. Continued Interactions	0.08	-0.25*	-0.01	0.14

*p≤.05 **P≤.01 ***P≤.001

The findings revealed no significant relationships between other measures of impact and Extension organizational leadership factors studied.

Educational Importance

The Polish/American Extension Project Model demonstrated how the state Cooperative Extension Systems at the land grant universities can collaborate with the ES-USDA to provide Extension staff for developmental assistance programs and help educate the American public about U.S. involvement in developmental assistance programs. The information documenting the extent of impact provided important data to further establish the benefits to Americans from their participation in developmental assistance programs. Specific recommendations for organizational change included more lead time to prepare for assignments, continued salary savings and hiring of backfills, a more proactive role of administration toward support of international, leadership for international within Extension, additional support for families on international assignments, continuation of orientations and expansion of orientations to include local Extension organizations, deorientations, more international opportunities for Extension and more careful selection of individuals.

This was the first developmental assistance program to involve large numbers of county Extension professionals. The results of the relationship study provided clues for conducting experimental or predictive studies to obtain additional information about the relationship of Extension organizational factors that may contribute to further evaluation of the international dimension of Extension and to broadening the impact of international involvement at the community level.

Cited References

Andrews, M. L., Evans, D. E., Crago, N.E., & Place, N.T. (1998). Overseas Technical Cooperation Impact Study. USDA Proposal No. AG-970050.

Beck, D. (1998). The final report of the United States Department of Agriculture: Implementation of inter-agency agreements. (Number 180-0024 and Number 180-0039). Washington, DC: United States Department of Agriculture.

Bennett, C. F., & Rockwell, K. (1994, December). Targeting outcomes of programs (TOP): An integrated approach to planning and evaluation. Washington, DC: Extension Service - United States Department of Agriculture.

Global perspectives for extension. (1989, April). Washington, DC: United States Department of Agriculture.

Goodwin, C. R., & Nacht, M. (1991). Missing the boat: Failure to internationalize higher education. NY: Cambridge University Press.

Ludwig, B. G., & Barrick, R. K. (no date). Internationalizing extension: An exploration of the characteristics evident in a state university Extension system that achieves internationalization. The Ohio State University.

Ragland, J. L. (1995a). Agricultural extension in Central and Eastern Europe with an emphasis on Poland. In C. H. Rust, D. Kierbiedz, & B. Wegrzynowicz, Agricultural extension in central and eastern Europe. Poznan, Poland: The Centre of Extension Service and Education in Agriculture.

Scott, R. A. (1990). Strategies for internationalizing campus and curriculum. Speech presented at the national conference on "Internationalizing Campus and Curriculum."

Smuckler, R. H., Berg, R. J., & Gordon, D. F. (1988). New challenges new opportunities, U.S. cooperation for international growth and development in the 1990s. Michigan: Center for Advanced Study of International Development, Michigan State University.

Tesch, R. (1990). Qualitative research: Analysis types and software tools. Bristol, PA: The Falmer Press, Taylor and Francis, Inc.

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ESTABLISHING A NETWORK FOR COLLABORATION ACROSS LATIN AMERICA: A PARTNERSHIP BETWEEN THE TEXAS A&M UNIVERSITY SYSTEM AND THE INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

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Abstract

A partnership was formed between The Texas A&M University System (TAMUS) and the Inter-American Institute for Cooperation on Agriculture (IICA) in order to disseminate technical content using distance education technologies. The vision of this partnership is to improve access to information, expertise, and training opportunities between and among the United States and countries in Latin America. The establishment of this partnership was economically and technically feasible because of the existing interactive videoconference network at Texas A&M University in College Station, Texas. A telecommunications network (hub) was placed at IICA headquarters in San José, Costa Rica to connect with the Texas A&M University System.

With the technical infrastructure in place, a module development team was created to provide the continuing education content. This team consists of content experts, instructional designers, and media specialists from both Texas A&M University and IICA. Two introductory modules were delivered using interactive videoconferencing and web-supported materials in the Summer, 1998. Evaluative results were informative and served as guideposts in developing three additional programs, *Gender Equity, Windows of Sustainability*, and *International Trade.* This paper will share the process of establishing the partnership and the experiences of delivering content across the network.

Philosophical Foundations: Establishing the Partnership

"Distance education is becoming increasingly global, creating myriad new alliances as traditional educational institutions join with businesses, foreign governments, and international organizations to offer and use distance learning" (Potashnik, 1998, p. 42). Technological advancements are enabling organizations to reach beyond the borders of their state and country to work with diverse groups around the world. Interaction among these groups will continue to encourage the exchange of knowledge and information. A partnership was formed between The Texas A&M University System (TAMUS) and the Inter-American Institute for Cooperation on Agriculture (IICA) in order to disseminate technical content using distance education technologies. The vision of this partnership is to improve access to information, expertise, and training opportunities between and among the United States and the many countries of Latin America. Establishing the partnership between TAMUS and IICA is one example of creating an alliance that is intended to be mutually beneficial and to encourage bilateral exchanges across nations.

"Between 1990 and 1997, the value of goods crossing international borders grew by just under 60% in dollar terms, whereas foreign direct investments over the same period nearly doubled" (Lane, 1998, p. 10). The need to increase international awareness within the United States arises out of the increase in business transactions between countries. "To motivate and manage their overseas workforces, US companies must make sure that local executives' management styles are compatible - as well as the ethnic mix of the workforce they will be managing" (Tierney, 1993, p. 22). Due to geographic location, specific importance exists within Texas to encourage an understanding of the political, economic, and social aspects of Latin America. The lack of sensitivity of individuals to other cultures (Luft, 1996) can be improved through increased interaction with diverse groups. The partnership between TAMUS and IICA is intended to address these issues by encouraging interaction between faculty, staff, and students within the Texas A&M University System and individuals associated with IICA in Latin America.

Similarly, individuals within Latin America require an understanding of the culture of the United States in order to have effective business dealings. These business dealings impact economic sustainability. “Developing countries have historically been faced with serious economic problems” (Gow & Morss, 1988, p. 1400). These economic problems have in turn led to an increased need for education. Education is the central, strategic element necessary for the transformation of production, and competitiveness for sustainable development. The societal need identified by IICA throughout Latin America is for technical expertise to improve environmental and economic sustainability.

IICA is promoting a change in rural society, based upon agricultural diversification, the transformation of production and the development of agroindustrial processes. To accomplish this *change*, a telecommunications network (hub) was placed at IICA headquarters in San José, Costa Rica to connect with the Texas A&M University System. "In most developing countries, the telecommunications infrastructure has largely been confined to urban areas" (Wright, 1995, p. 105). However, the partnership between TAMUS and IICA is intended to provide education and training for diverse groups throughout Latin America in both urban and rural areas. The 21st

Century will see an increase in delivery in electronic formats allowing individuals to receive education in their own country (Chandersekaran, 1998, p. 29). Technology is "transforming the world into a borderless educational arena" (Potashnik, 1998, p. 42).

With the technical infrastructure in place, a module development team was created to provide the continuing education content. This team consists of content experts, instructional designers, and media specialists from both Texas A&M University and IICA. The IICA/TAMUS module development team develops educational programs using a wide variety of multimedia tools (videoconferencing, WWW, CD-ROM) in order to increase the effectiveness of the educational experiences. The team uses an Extension model (train-the-trainer) for the delivery of information and dialog between content experts at IICA and Texas A&M University. Both organizations are involved in creating the modules to encourage ownership so that the programs will be promoted and implemented throughout the countries. The development of the telecommunications network and module development team will enable Latin America and the United States "to respond more effectively to the challenges of societies that are undergoing accelerated processes of change demanding rapid, flexible and effective responses" (*IICA in brief*, 1998).

Methods and Results

In the summer of 1998, Texas A&M University conducted two workshops for IICA. The first, *An Introduction to Distance Education*, focused on the learners, the applications, and the technical capabilities of distance education. This session included specific examples of synchronous (bound by time but not necessarily by place) and asynchronous (not bound by time or place) delivery strategies. The workshop demonstrated a variety of visual tools (WWW, video streaming, computer graphics, and on-line communications) and the videoconference equipment. This training session was delivered in English from College Station, Texas to San José, Costa Rica via an interactive videoconference. A Spanish-speaking Texas A&M University student provided translation assistance as needed.

An evaluation was conducted following the workshop "on site" in Costa Rica. The results of the 12 respondents were tallied (see Table 1) and a content analysis was completed for the qualitative data. There were three open-ended questions as a part of the evaluation: 1) What did you like? 2) What would you like to see more of? and 3) What suggestions could you make to improve this program? For the first question, participants were fascinated by the use of different media for education. They also enjoyed the presenters' willingness to offer their knowledge on the subject. One respondent indicated that the presentation was "very good, fast, very concrete, and informative. The connection, in spite of the problems, was good and allows [us] to see or realize the great potential this technology offers."

In response to the question, "What would you like to see more of," respondents indicated a need for more applied demonstrations in their specific fields of expertise, hands-on experience with the distance education equipment, and more information about the preparation of materials. They also wanted to see how CD-ROM, Internet, and video could be used in both distance education modes and in traditional classrooms.

In response to the third question regarding suggestions to make the program better, respondents wanted a back-up mechanism to minimize technological problems, participant punctuality, and clearer transmission of audio. Regardless of the technological glitches because of the dial-up connection between College Station and San José, respondents still indicated great support and encouragement to continue the distance education network. "Keep going forward!" "Go on!" "Without a doubt this is going to be a very ambitious project; hope that it'll be lasting as well."

Table 1

Videoconference Evaluation: Introduction to Distance Education, June 29, 1998, San José, Costa Rica (N=12)

1. *How would you evaluate the workshop?*

Excellent 1 Very good 6 Good 4 Average ____ Poor 1

2. *Did the topics covered provide the tools/information necessary for a better understanding of distance education?*

Yes: 11 No: ____ No comments: 1

3. *Would you recommend this program?*

Yes: 9 No: 2 No comments: 1

4. *Please circle what best describes your reaction to this program:*

1=No *2=A little* *3=Average* *4=Very good* *5= Excellent*

	1	*2*	*3*	*4*	*5*
Trainer quality			2	7	2
Materials quality		1	3	5	2
Presentations quality		1	3	5	2
Facilities quality		2	3	4	2
Appropriate use of time	1	2	3	2	3
Training quality		2	3	5	1
Content quality		1	3	5	2
Training applicability			7	3	1
Interaction with remote site		3	2	4	2

The second workshop, *Distance Education Applications,* was delivered one month later. This workshop demonstrated a variety of distance education teaching techniques with a focus on plant and animal health. The following tools were demonstrated: a microscope/video system, videotape, 35mm slides, CD-ROM, computer graphics, and animation software. This training session was delivered in Spanish via simulataneous translation from College Station to San José.

A similar evaluation was conducted following the second workshop. The results of the 21 respondents were tallied (see Table 2) and a content analysis was completed. The identical open-ended questions were used in the second evaluation. In response to "What did you like," respondents enjoyed viewing the practical applications of distance education equipment, computer graphics, and animation. They liked the exposure to the possibilities of using this technology to improve instruction. Of particular interest, was the health topics presented via the microscope. A participant stated "the quality of the instructor, the materials, the presentations, the facilities, the training, the content [and] …interaction with the remote site" were good. Additional quotes included: "The possibilities," "Everything," "The use of state of the art technology," "The interaction with Texas regarding fungus plant health," and "Excellent quality of videos and slides."

For the second question, respondents made valuable comments regarding what they wanted to see in future training programs. There was an interest in how this technology might impact regional students or producers. For example, they wanted to know if this technology would work "for field experience exchange from one place to another." Content topics of interest included 1) disease diagnosis at a distance, 2) animal physiology and nutrition, 3) biotechnology, and 4) more information on nematodes. Technological and educational topics of interest included 1) computer graphics creation, 2) hands-on experience with the equipment, 3) cost/benefit analysis of equipment, and 4) workshop practices to encourage interaction between the instructor and the audience.

In response to the third question on program improvement, problems with audio transmission was the most frequent statement. Comments included "If possible, avoid the simultaneous translation during presentations." "Since much of the presentations were on plant health, it would have been better to have a translator that handles the terminology (even though most of the people in the room spoke English)." "Better audio to understand the conference; improve the translation." "Better audio, maybe with individual systems (like the translation equipment that IICA has)." In addition to audio and translation comments, technological topics similar to those mentioned in question two were restated.

Current Projects

Three additional programs followed the initial introductory workshops. The first, *Gender Equity*, was delivered in September 1998 via interactive videoconference and web-supported materials. Content experts were at both sites and the entire program was delivered in Spanish. Input received from prior evaluations was incorporated into the workshop. Audio problems were addressed by avoiding simultaneous translation and participant activities were incorporated to increase interaction between sites.

Table 2

Videoconference Evaluation: Distance Education Applications, July 31, 1998, San Jose, Costa Rica (N=21)

1. How would you evaluate the workshop?

Excellent 8 Very good 9 Good 4 Average ____ Poor ____

2. Did the topics covered provide the tools/information necessary for a better understanding of distance education?

Yes: 18 No: 1 No comments: 2

3. Would you recommend this program?

Yes: 18 No: 2 No comments: 2

4. Please circle what best describes your reaction to this program:

1=No 2=A little 3=Average 4=Very good 5=Excellent

	1	*2*	*3*	*4*	*5*
Trainer quality		1	3	8	9
Materials quality			1	6	14
Presentations quality			1	10	10
Facilities quality		1	1	7	12
Appropriate use of time		1	4	11	5
Training quality		1	4	8	8
Content quality			5	6	10
Training applicability		1	3	8	9
Interaction with remote site		3	2	7	9
Translation		3	7	5	6

The next two modules, *Windows of Sustainability* and *International Trade* are currently under development. The delivery mode of these modules is interactive CD-ROM rather than videoconference. The content expert for the *Windows* module is an IICA employee and has traveled to College Station to consult with the development team. The focus of this module is the implementation of sustainable agricultural methods. The content expert for the *International Trade* module is a TAMU employee and is currently consulting with the development team. The focus of this module is an overview of international trade vocabulary and methods. Both of these modules are being prepared for delivery in the Spring of 1999.

Conclusions

The module development team prepared content for delivery via multiple distance education technologies. This development process has provided invaluable experience working with instructional telecommunications across international borders. Participant comments on the first two modules were extremely useful in the development of current and future projects. "The interaction between the two sites and the possibility of the speaker to expand the subject" was mentioned as a benefit of the network. The audience enjoyed the use of computer graphics, animations, videos, microscopes and slides in the presentation of material. Participants preferred an increase in dialog between sites and the next module developed was designed with active learning strategies. The initial outcomes of this project have been extremely successful.

The project is only in its infancy, yet the educational and economic possibilities are tremendous. Establishment of this partnership has created an opportunity to provide education in a cost efficient and timely manner. "The power of these instructional systems lies in the way the instruction is constructed and delivered—not in the technical components" (Schwier, 1994, p. 213). The primary goal is to use technology to provide educational opportunities. As additional content areas are identified and IICA member countries join the network, the content dissemination will expand to a larger, and more diverse, clientele. This project hopes to be executed at the multinational level and eventually become hemispheric in scope by the millennium.

References

Chandersekaran, A. C. (1998). Education and training transformed by Internet-enabled electronic commerce. *Business America, 119*(1), 31-32.

Gow, D. D. & Morss, E. R. (1988). The notorious nine: Critical problems in project implementation. *World Development, 16*(12), 1399-1418.

Lane, P. (1998). World trade survey: Trade by any other name. *Economist, 349*(8088), s10-s14.

Luft, V. D. (1996). Extent to which cultural diversity is addressed in secondary agricultural education. *Journal of Agricultural Education, 37*(3), 67-75.

Potashnik, M. (1998). Distance education: Growth and diversity. *Finance & Development, 35*(1), 42-45.

Schwier, R. A. (1994). Contemporary and emerging interactive technologies for distance education. In B. Willis, (Ed.), *Distance education: Strategies and tools* (pp. 213-231). Englewood Cliffs, New Jersey: Prentice Hall.

Tierney, R. (1993). Diversity. *World Trade, 6*(11), 22-25.

Wright, D. (1995). Reaching out to remote and rural areas. *Telecommunications Policy, 19*(2), 105-116.

Session N Extension Programming

March 23, 3:30 - 5:30 p. m.

Session Chair - Rakey Cole

Location: Cascade Room

TITLE: Extension Professionals Perspectives on Global Programming
AUTHOR: Barbara G. Ludwig, Associate Professor
Ohio State University Extension, Wooster, Ohio
DISCUSSANT: Carl Salsedo

TITLE: Influences of Extension Programming on a Micro-Enterprise Program for Liberian Refugees in Guinea
AUTHOR: Michelle E. Owens, Donald E. Evans
Accra, Ghana, Pennsylvania State University
DISCUSSANT: Carl Salsedo

TITLE: Agricultural Education and Extension in Cuba During the "Special Period"
AUTHOR: Carolyn S. Lane
University of Minnesota
DISCUSSANT: Paul Kibwika/Abigail Mulhall

TITLE: A Description of a Small Scale Farm Systems in Lower Casamance, Senegal: The Initial Programming Step
AUTHOR: Matt Baker, Mamadou Lo, Peter Hildebrand
University of Florida
DISCUSSANT: Paul Kibwika/Abigail Mulhall

EXTENSION PROFESSIONALS PERSPECTIVES on GLOBAL PROGRAMMING

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Abstract

A study of 823 Extension professionals in a mid-western state investigated activities and attitudes related to global programming efforts. The study also sought to identify barriers which limit professionals' ability to incorporate global perspectives into local programming. Results indicate over 60% of Extension professionals are interested in incorporating global perspectives and activities into programming. A lack of time, uncertainty that globalizing is a programming priority and lack of expertise or information were the primary barriers identified to adding a global perspective to domestic programming.

EXTENSION PROFESSIONALS PERSPECTIVES on GLOBAL PROGRAMMING

INTRODUCTION & PURPOSE OF THE PAPER

Extension programs across the world are being challenged to consider their impact, relevance and effectiveness in our rapidly changing society. In the coming century, global components will become more central to our mission for Extension. They tie to the goals of economic well being and quality of life for citizens and remind us that we are part of a larger global community. As the AIAEE conference participants revisit Extension before the 21st century, pausing to examine the attitudes of Extension professionals toward incorporating global perspectives into programming for clientele and examining barriers which exist makes good sense.

In the summer of 1997, a study of all Extension Professionals in a mid-western U.S. state was undertaken. The goal was to determine the current level of activity and interest of Extension professionals relative to globalization. The study also sought to identify barriers which may impede professionals' ability to incorporate global perspectives into local programming or participate in an international project. A review of literature revealed few studies conducted related to internationalizing the Extension component of the land-grant university system. A 1998 report by the International Agriculture Section of the National Association of State Universities and Land-Grant Colleges presents an Agenda for U.S. land-grant universities and indicates, "we urgently need to find ways to increase the level of engagement of our resident teaching faculty, research scientists, and extension agents in addressing global dimensions..." (GASEPA, 1998, p. 1). The Agenda supports the findings of the current study. Those interested in globalizing Extension or higher education within their own state or country may find the instrument developed and process used of interest.

PURPOSE AND OBJECTIVES

The purpose of the study was to identify Extension professionals' activities and attitudes toward six global dimensions.

1. To ascertain current involvement of Extension program professionals in global programming activities.
2. To ascertain the level of interest of Extension program professionals in incorporating global dimensions into future Extension programming for Ohio clientele.
3. To ascertain professionals' interest in an out-of-country assignment
4. To ascertain professionals' perceived barriers to incorporating global dimensions into future Extension programming for Ohio clientele..
5. To ascertain professionals' perceived barriers to participation in an out-of-country assignment.
6. To ascertain self-assessed competencies which will enhance global programming activities.

METHODOLOGY

Population. The target population consisted of 823 Extension professionals employed by Ohio State University in May of 1997. The population included all faculty and nonfaculty program professionals and administrators with an Ohio State University Extension assignment. Names were secured from the OSU Extension Personnel Office in May, 1997 to assure an up-to-date listing.

Instrumentation. A mail survey instrument was developed based on an instrument developed by Ludwig (1991) in a study of Extension personnel in Ohio. Content validity was established by a panel of experts from the College of Food, Agricultural and Environmental Sciences. To help control measurement error, the instrument was pilot tested and field tested using 26 Extension professionals. Test-retest reliability (1 month) was assessed. Reliability coefficients for domains of interest criteria (Nunally, 1967) established for reliability.

A five point Likert-type scale was used to measure the level of interest in incorporating a global dimension into future Extension efforts. Respondents were asked to identify whether they had: (1) slight interest, (2) low interest, (3) moderate interest, (4) considerable interest, or (5) high interest. Fifteen barriers were identified through a review of literature and interviews with Extension faculty and professionals. Respondents were asked to identify the three major barriers they personally perceived.

Data Collection and Analysis. The questionnaire and a personalized cover letter were mailed by campus mail to all program professionals in May, 1997. Questionnaires were coded to identify early and late respondents. Non-response error using late respondents as a surrogate for non-respondents (Miller & Smith, 1983). Using a t-test at the .05 alpha level, no significant differences were found between early (N=562) and late respondents (N = 92) on the domains of interest.

RESULTS and CONCLUSIONS

Six hundred fifty-four of the survey instruments returned were usable. An additional 65 survey instruments were insufficiently completed to be used in the study or were returned with a notation that the individual no longer was an Extension employee. This represents a total return rate of 87%. Responses were coded for computer analysis using SPSS. Descriptive statistics were used. An overview of the results is reported.

Current involvement of Extension program professionals in global programming activities: Extension professionals are involved in a variety of international activities, with 63% identifying one or multiple activities within the past eight years. One hundred sixty one (25 %) professionals report they are currently incorporating a global dimension into Ohio Extension programming efforts. Most activities involved contact with individuals from another country. Only limited evidence of teaching activities or curriculum development by Ohio Extension professionals was evident. Table 1 reports the types of international activities and frequency of participation. Hosting of an international visitor was reported by 35% of those surveyed, 25% have communicated by e-mail with an international colleague in another country, 21% have served as a communication link between people from different countries, 19% had involved clientele in an international activity.

Level of interest in incorporating global dimensions into future Extension programming for Ohio clientele: Four hundred and twenty five professionals (65%) indicated an interest in incorporating an international dimension into future Extension efforts. Most indicated a moderately strong interest in incorporating global dimensions into future programs. A Likert-type scale was used to assess level of interest. Scores ranged from 1-5, with 1 indicating slight interest and 5 indicating high interest. The distribution of ratings had a mode of 3 and a mean of 3.1 (SD 1.16). Thirty two percent indicated high or considerable interest.

Interest in an out-of-country assignment. Short term assignments or study tours were of greatest interest to Ohio Extension professionals. Forty-four percent of the professionals indicated an interest in an out-of-country assignment either at the present time or at some point in the future. An additional 11% responded "maybe". Thirty five percent had no interest in an international assignment and 10% had never considered the possibility. Those responding "yes" or "maybe" were asked to indicate the length of assignment they would consider. Short term assignments of less than three months were the preference of 48% of the respondents. Intermediate length assignments of 3-12 months were requested by 17% and 7% expressed an interest in a long term assignment of over 12 months.

Perceived barriers to incorporating global dimensions into future Extension programming for Ohio clientele. Fifteen potential barriers were listed on the instrument and respondents were asked to identify the three which were most likely to prevent them from incorporating a global dimension into future Extension efforts. The most frequently identified barriers related to lack of time (40%), uncertainty that incorporating global perspectives was a program priority (35%) and lack of experience (28%). Language skills to work with diverse Ohio clientele and family commitments were also identified as frequent barriers. Fear of negative career impacts (3%), lack of reward in annual performance appraisal (4%), not recognized in promotion criteria (4%) and cultural barriers (4%) did not appear to be major barriers. Table 2 reports the results.

Perceived barriers to participation in an out-of-country assignment The primary barrier to an out-of-country assignment related to family commitments (43%). Thirty nine percent perceived lack of time as a barrier. Other frequently identified barriers included: not a programming priority (25%), lack of financial support (25%) and language skills (24%). Lack of rewards in annual performance appraisals, lack of recognition in promotion criteria and lack of materials did not appear to be major barriers. Table 3 reports the results.

Background demographics and competencies. Educational levels were high among respondents with 87% holding a college degree and 60% having advanced degrees. Of the total respondents, 42% were male and 58% were female. Extension professionals working at county or district locations represented 70% of the respondents while state-based professionals represented 30%. Program assignments closely approximated the proportions of the population. There is a group of professionals (23%) who have lived and worked outside the United States. Vacation travel was not included in the results reported. The time spent out of the country ranged from one month to 468 months.

Assessment of language skills other than English in spoken conversation, reading, writing and comprehension showed 23% reporting a fair or higher level of competency. Professionals were asked to identify language skills other than English and self assess their level of spoken, reading, written and comprehension skills. A four point Likert-type scale of Poor (1), Fair (2), Good (3) and Excellent (4) was used.

IMPLICATIONS

Although the study cannot be generalized to other states, it provides a broad overview of the current situation in one state. Further study of Extension professionals by program area of responsibility and in other states is suggested. A similar study of Extension professionals in 1989 (Ludwig, 1991) provided base-line data for comparison. Positive growth and change was noted in reducing barriers and increased interest in global programming for Ohio clientele was evident.

Leadership. The current study pointed to the need for Extension program leaders to communicate the importance for incorporation of global perspectives into on-going Extension programs. A major barrier was lack of understanding that incorporating global perspectives was a programming priority. Communication of an administrator's support will be evident not only by what is said, but more importantly through the policies and procedures implemented in support of globalization. A clear sense of direction, strong leadership in globalization and enthusiasm will ensure concerted and sustained action. Development of incentives and an organizational culture that recognizes and rewards incorporation of global concepts into domestic Extension programming is necessary.

Extension leaders who provide a clear and enthusiastic sense of direction for globalization will help to ensure concerted and sustained action. Appointing a person to support and coordinate internationalization of the Extension program and activities is a necessary implementation strategy as is incorporation of fiscal support into the ongoing Extension budget. Policy mechanisms that support travel abroad, professional leaves, international assignments or time/resources to develop curriculum should be considered. Incorporation of global expectations into position guidelines, reward of middle managers for fostering positive change toward globalization and hiring candidates with international experience will enhance the human resource base of Extension. Extension leaders need to work with promotion and tenure committees to define international expectations.

Professional Development. If Extension educators have responsibility to help clientele develop a better understanding of the complexity of global issues, professional growth and development opportunities must be initiated for Extension staff. A barrier identified by the current study was a lack of experience and knowledge of how to add global dimensions to programming and curriculum. Extension educators need excellent technical skills, strong communication and people skills as they work with an audience who becomes more diverse each year. Global experience and attitudes increase in importance as universities target helping stakeholders to become globally competent.

Extension educators must develop global knowledge and skills that can be transmitted to clientele through programming efforts. For some individuals, motivation and expertise development will come because of out-of-county opportunities. Most Extension faculty will not travel beyond U.S. borders so other methods must be identified. Staff development offerings could include: workshops, mentoring, developing of a resource library, hosting of international guests, or participation in self-directed learning. Creating linkages with corporate America to strengthen partnerships and with international universities should be investigated.

GASEPA (1998) identified five goals for incorporating a global dimension into teaching, research and extension programs. These include: (1) enhancing global competitiveness of U.S. Agriculture though human resource development; (2) development and dissemination of information about markets, trade and business opportunities; establishment of mutually beneficial collaborative global partnerships; (4) promotion of trade through global economic development; (5) promotion of global environmental quality and stewardship of natural resources management. As Extension expands to embrace the world, Extension must do so with local constituents, not for them. Development and dissemination of information about markets, trade and business opportunities should be encouraged. Promotion of trade through global economic development, establishing mutually beneficial global partnerships and creating a greater awareness and understanding of global environmental concerns are also suggested by the GASEPA task force. Commodity groups could be targeted for public policy education on global decision making.

Based on recommendations of the GASEPA task force, professional development opportunities might focus on enhancing global competitiveness of U.S. Agriculture through human resource development and initiating the concept of leadership development in a global context. Key leaders will benefit from interdisciplinary international experiences aimed at establishing mutually beneficial global partnerships and creating a greater awareness and understanding of global environmental concerns. Overseas travel for Extension professionals and leaders may be one approach, but creating cross-cultural competency, awareness and understanding for all age groups though local cross-cultural activities is required. The new millennium will offer many challenges to Extension. Recognition of the global community we inhabit and share with partners around the world and expansion of linkages between domestic clientele and the international community will become an increasing priority.

References

GASEPA Task Force (1998). Globalizing Agricultural Science and Education Programs For America. International Agriculture Section, National Association of State Universities and Land-Grant Colleges, Bobby D. Moser Chairman. Washington D.C.

Ludwig, Barbara G. (1991, March). Identifying competence and interest of Extension professionals in internationalizing the Ohio Cooperative Extension Service. Proceedings, 7th Annual Conference of the Association of International Agriculture and Extension Education. Chevy Chase, Maryland.

Miller, Larry E. And Smith, Keith (1983). Handling non-response issues. Journal of Extension, 21, 45.

Nunally, Juna (1967). Psychometric theory. McGraw-Hill Book Company.

Table 1

Respondent's Involvement in International Activities During 1989-1997

Activity	N	%
Hosted an international visitor	231	35
Communicated by e-mail with an international colleague in another country	165	25
Served as a communication link between people from different countries	138	21
Involved clientele in an international activity	121	19
Advised an international student	108	17
Other involvement	101	15
Participated in an international study tour	91	14
Subscribed International Publication	77	12
Joined an international organization in your field	76	12
Developed curriculum materials incorporating international issues	73	11
Created an Extension program based on an international issue	68	10
Participated in an international development project	62	10
Conducted an international research project	47	7
Taught at an overseas institution	39	6
Involved in a "sister city program"	30	5

N = 654 - Percentage exceeds 100% due to multiple responses.

Table 2
Barriers Most Likely to Prevent Incorporation of an International Dimension in Future Ohio Extension Efforts

Barrier	N	%
Lack of Time	264	40
Not a Programming Priority	228	35
Lack of Expertise	181	28
Language Skills	151	23
Family Commitments	139	21
Lack of Financial Support	108	17
Lack of Support from Local Clientele	97	15
Lack of In-Service Training	57	9
Lack of Materials	46	7
Other	36	6
Lack of Support from Administration	35	6
Cultural Barriers	29	4
Not Rewarded in Annual Performance Appraisals	27	4
Not Recognized in Promotion Criteria	24	4
Lack of Support from Colleagues	23	4
Fear of Negative Career Impacts	18	3

Percentage exceeds 100% because of multiple responses.

Table 3
Barriers Most Likely to Prevent Participation in an International Assignment

Barrier	N	%
Family Commitments	279	43
Lack of Time	258	39
Lack of Financial Support	166	25
Not a Programming Priority	163	25
Language Skills	156	24
Lack of Expertise	120	18
Lack of Support from Local Clientele	70	11
Lack of Support from Administration	43	7
Lack of In-Service Training	32	5
Fear of Negative Career Impacts	24	4
Cultural Barriers	21	3
Lack of Support from Colleagues	17	3
Not Rewarded in Annual Performance Appraisals	13	2
Not Recognized in Promotion Criteria	12	2
Lack of Materials	10	2
Other	29	4

Percentage exceeds 100% because of multiple responses.

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INFLUENCES OF EXTENSION PROGRAMMING ON A MICRO-ENTERPRISE PROGRAM FOR LIBERIAN REFUGEES IN GUINEA

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Abstract

World-wide refugee numbers have grown from three million in the mid 1970's to twenty-seven million people by 1995, but dropped to twelve million by 1997 mostly due to resolution of African conflicts (UNHCR, 1998). The problem addressed by this research was to develop an effective extension methodology for the implementation of a socio-economic relief program intended to assist Liberian refugees during their exile in Guinea, West Africa. This ethnographic case study of a micro-enterprise extension program demonstrates the importance of refugee participation, self-selection of participant groups, business education training, and flexibility during implementation, for success. Domain and inductive analysis of ethnographic interviews and participant interviews revealed the limited opportunities for Liberians to borrow money, especially women, and the lack of educational opportunities for refugees. Also brought to light was the lack of opportunities for women to fully participate in relief programs even though 75-80% of all refugees are women and their dependents. It is recommended that extension training with client participation at all levels be included in future refugee relief programming. It is also recommended that international agricultural extensionists and educators view the growing number of refugee situation world-wide as an opportunity to extend educational opportunities to refugees, particularly the women.

Introduction

In the 1990's, Africa has become the continent that generates the largest number of refugees. According the United Nations High Commission on Refugees (UNHCR, 1997) and other sources, 75 - 80% of all refugees in the world are women with their dependants (Smyke, 1995; Green, 1994; Schultz, 1994; Mayotte, 1992). Many refugee women find themselves as the sole providers for their families as well as for the orphaned children and abandoned elderly of their communities. This is a unique predicament for many of these women. Also, illiteracy rates for African women range from 75 to 80% (Green, 1994). Therefore, refugee women are not in a good position to acquire the skills they need to develop a successful business venture.

Some of the difficulties of designing and implementing relief and extension programs for refugees are laid out by Needham (1995).

1: Refugees are assumed to be helpless.
2: Refugees are treated as statistics and numbers
3: Assisting agencies are more accountable to donors than to recipients.
4: Highly specialised and inflexible approaches to provision of assistance.
5: High-tech, capital-intensive types of assistance widen the cultural and social gap between intervener and the refugee.
6: Decision making apparatus does not have provision for major local input.
7: many agencies do not have a participatory approach within their own organizations.

Denying refugees the chance to participate in developing programs to address their own needs is not only short-sighted, it deprives them of self-esteem and dignity, causing additional and needless depression, anxiety and apathy (Needham, 1995).

The setting of this case study of Liberian refugees is a non-governmental, micro-enterprise extension program in the Gueckedou prefecture of central Guinea. The program was started in late 1996 and was aimed at improving the food security of refugees as the food distribution by the UNHCR and WFP (World Food Programme) were to be cut off in January 1997, after seven years of food distributions (UNHCR, 1997).

Purpose of Study

The purpose of this research was to learn the nature of the Liberian refugees' world from the point of view of those who occupied it, with detailed descriptions by the refugees themselves. Additionally, it methodically summarized the micro-enterprise extension program implemented in Guinea for the Liberian refugees. It drew on observations made in Guinea, working documents, meetings attended in Guinea, literature describing the refugee situation, and ethnographic interviews of Liberian refugees.

Objectives

The specific objective of the study were:

1. Who are the Liberian refugees?: Why did they come to Guinea and what do they need to return to Liberia?
2. How was the Micro-Enterprise Extension program perceived by the Liberian refugees to provide for their needs?
3. What questions should be asked of refugees to design extension relief programs to address refugee needs?

Methods and Data Sources

Research was conducted in the forest region of Guinea from September 1996 to July 1997. This research sought to disclose the refugee phenomenon from the perspective of those living it. It was a subjective approach that proposed clarification of the refugee responses to a micro-enterprise extension program. In addition to researcher observations, ten refugees were selected for ethnographic interviews. The ten Liberian participants were selected for this research based on their involvement with the extension program, their refugee experience, their relationship with the researcher, and their ethnographic background.

Characteristics of the qualitative research paradigm relevant for this study are phenomenological framework, participant observation, ethnographic methods of data collection, domain analysis and inductive data analysis (Bodgan & Bilken, 1992; Patton, 1990; Borg & Gall, 1989; Spradley, 1979). Data collected included a review of on-going political events; researcher observations; ethnographic interviews; video taped recordings of micro-enterprise participant trainings; and refugee generated short stories and poems. It is noted that poetry is not limited to romanticism but can also be historical and precise (Clifford, J., in Van Maanes, 1988).

Results and Discussion

Refugee situations are usually relief oriented and the support efforts are designed to meet the immediate needs as quickly as possible, normally with handouts. The participatory process may be argued to be too slow, taking valuable time that should be spent getting resources to those in need. However, this study documented a program that was highly participatory in nature and also operational within two months.

Capacity Building

This micro-enterprise program represented a departure from the traditional charity-type of humanitarian program. It successfully served a dual purpose: (1) responding to the immediacy of refugee food needs; it effectively distributed available funds to the families experiencing food shortages due to the reduction of UN food distributions, and (2) enhancing the capacity of the primarily women clients. By building self-sufficiency, the program helped many refugee families to function with the on-going stresses of the refugee situation, as well as the yet-to-be-defined challenges of repatriation efforts. Some of the components of the program included:

√ participatory approach
√ women included at all levels
√ non-collateral loans given to those who traditionally would not receive a loan
√ did not treat recipients as beggars: repayment was expected
√ business extension program for all clients before funds distributed
√ technical skills education program
√ weekly follow-up by Extension Agents
√ sub-offices in camps with local representative
√ no interest - no fee loans
√ self-selected groups of loan recipients
√ good relationship with donors with flexibility to adjust the program
√ trained and educated local staff

Refugee situations do not have to be a monetary "black hole". Money can be spent to develop self-sustaining programs. Innovative programs with government cooperation and funding can improve the life for refugees and their host countries. The refugee phenomenon does not have to be one of dependency. And programs designed to create self-sufficiency can be operational just as quickly as handout humanitarian aid programs.

Participatory

This program was highly participatory with refugee staff involved at all levels of decision making. A tremendous effort was made to also include women at all levels of the staffing hierarchy. This effort was met with resistance from several sources; however, it became one of the unique strengths of this program. Even though tradition in many countries dictates that men are the wage earners and women are not active outside of the home, it is possible to set-up successful, culturally acceptable extension programs for refugee women. This assists the women and her extended family with their immediate problems of living in a refugee situation and also better prepares the women for the transition back to her home country.

Research Questions

Q1: Who are the Liberian refugees?

A Liberian student said, "The life of a refugee is sad. The word refugee has a different definition from its' meaning when I looked it up. Wives leave husbands, husbands leave wives. Children go away and relatives separate because of hard times.". Joseph N. wrote in a poem, "You escape the house of death and enter the room of suffering.". And yet another Liberian wrote, "A refugee is a person who lost human dignity and hopes to regain it, but to no avail. Oh, the life of a refugee is hard.". Definitions of a refugee vary from that of international organizations who primarily focus their definitions on the reasons that refugees leave their country, where as the refugees themselves define the word from their experiences of fleeing and living as a refugee. Liberian refugees wrote and said that the word refugee means entirely different things to them now that they've lived the experience. They did not believe that they, themselves, would ever be driven from their homes, and hence, had to leave their homes unprepared when the rebel troops advanced. The Liberians stressed that they did not leave of their own will, but were forced to flee due to a life threatening event and wanted to return home. The Liberian refugees were not looking to emigrate, but for a chance to survive until repatriation was possible.

Q2: How did the program meet the needs of Liberian refugees?

Within six months of start-up, this micro-enterprise program had distributed 961 business loans. 70% of these loans were made to women with an overall repayment rate on all loans of 95%. The total number of beneficiaries reached 12,670 during this first six months. Extension and office staff was composed of 60% women.

Reasons for repayment given by the refugee participants were many but focused on the issues of hope and trust. The extension training and start-up money gave them hope. Many refugees said that since the organization trusted them with money, they wanted to show that they were worthy of that trust by paying back the money. Besides, by paying back the money, the organization had more funds to help their fellow refugees.

Q3: What question should be asked in future programs?

It is proposed that the first type of questions asked should be exploratory in nature about the specific refugee experience. How do they define and interpret the refugee experience? The answers to these questions will tell the programmers and planners much more about the specifics of the actual situation than any amount of experience and assumptions.

Next ask about how the refugees define themselves. What adjectives do they use in their personal descriptions of themselves? For example, Liberian refugees often used the word dependent to describe themselves. So the program was designed to give them opportunities for financial independence.

Later, questions should be included about the technical content of the expansion program, as well as the above questions, to provide information for on-going changes during program implementation. As some needs of the refugees are met, others become apparent and the program should be accommodating of the new needs as they arise.

Educational/Extension Importance

An essential ingredient for a successful relief program is similar to what is needed for a successful development program: Partnership. Some of the characteristics that are necessary if a partnership is to be created in relief work follows:

- √ Treat the refugees as competent and full members of the planning and implementation of relief programs.
- √ If the program is to help women, include women in all aspects of the program. The same holds true if the intended recipients are handicapped, men, children, or the elderly.
- √ Add an educational component to the program. Provide an opportunity for the clients to improve their skills and demonstrate your interest in all aspects of their welfare.
- √ Solicit advice and input from refugee staff. Regular staff meetings, with an atmosphere of sharing and problem solving, adds greatly to the teamwork.
- √ Create a conduit of feedback from the clientele. Ask them what are their difficulties with the existing program and what are their recommendations for changes.

Extension Programs for Refugee Women

There is a great need for innovation and participation in response to the growing numbers of refugees worldwide. Change places demands on the women to make financial decisions compatible with the board interests of society and tradition. Program implementation in a refugee situation allows for some imaginative and non-traditional activities. Because the refugee situation itself is by nature a non-traditional activity, new and inventive approaches to program design and extension can be attempted. For instance, including women in a micro-enterprise activity. Traditionally in Liberia, a woman would not attempt to start her own business. However, as seen by this example, women entrepreneurs proved to be a strong and powerful economic force in the community and an asset in the repatriation efforts. Therefore, to varying degrees, some traditions and customs can be abandoned or ignored for some types of programs in refugee situations. For instance, it proved to be possible to train women to do business, a non-traditional activity, as long as it was a business in a traditional area, such as food preparation and selling of household goods. International agricultural educators and extension agents should view the growing number of refugee situation as an opportunity to focus extension and education programs on the needs of these women.

A Refugee

Taking him to a world unknown
Where blind and naked ignorance
Delivers brawling judgements, unashamed,
On all things all day long;
Oh what a frustrating pit-fall

Where all Nature is but Art, unknown to him;
All chance, direction which he cannot see;
All discord, harmony, not understood;
All partial evil, universal good, never unfolded;
All hidden in grievous minds.

Never, ever he hears of him good,
And on the voice of mockers yell;
Refugee, Refugee ...
All against his precious wish

Nothing he says, nothing he does, is ever right;
All his fate is yet to be decided;
Anything he sees is nothing he gets;
Nothing he sees ever befalls him.
All against his precious wish

Oh what a life he'd ever faced
In this unknown world of turbulence;
Where the word Refugee is understood
Not as it used to be;
Cheap, rouge and hypocrite,
Tedious fraud and ignoramus;
Eternal jerk of the human pack;
All word to mean him
All against his precious wish.

References

Bogdan & Biklen (1992). Qualitative Research For Education: An Introduction to Theory and Methods. Second Edition. Boston:Allyn And Bacon.

Borg & Gall. (1989). Educational research: An introduction. Fifth edition. New York:Longman.

Green, Hollyn. (1994). Refugees in Transition - Educational Opportunity to Promote the Advancement of Women. Convergence, Volume XXVII, Number 2/3.

Mayotte, J.A. (1992). Disposable People? NY:Orbis Books.

Needham, R. (1995). Refugee Participation. UK:Centre for Development Studies.

Patton, M.Q. (1990). Qualitative Evaluation and Research Methods. Second Edition. London:SAGE Publications, Inc.

Schultz, C.M. (1994). Promoting Economic Self-Reliance: A Case Study of Afghan Refugee Women in Pakistan. Journal of International Affairs, Winter, 47, no. 2.

Smyke, P. (1995). Refugee Women. The Courier, no. 150, March-April.

Spradley, J.P. (1979). The ethnographic interview. New York:Holt, Rinehart and Winston.

United Nations High Commission on Refugees. (1997). News Update on Refugees in Guinea. Geneva:United Nations.

United Nations High Commission on Refugees. (1998). 1997 Statistical Overview. Geneva:United Nations.

Van Maanen, J. (1988). Tales of the Field: On Writing Ethnography.

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Agricultural Education and Extension in Cuba During the "Special Period"

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Abstract

The nation of Cuba presents an intriguing case study of the role of agricultural education and extension in national food security and economic development. After the collapse of the Soviet Union, Cuba lost a critical percentage of its agricultural inputs and food imports, creating a serious threat of mass starvation or malnutrition. By incorporating swift measures to shift national food production to an Alternative Model of sustainable agriculture and strong involvement of education at all levels, both formal and non-formal, Cuba has attained a level of self-sufficiency that is admirable. Although there are still great strides that must be made, Cuba's experience illustrates the vital role that agricultural education and extension play in maintaining a nation's food security.

Introduction

The island country of Cuba presents a fascinating case study of the role of agricultural education and extension in national development. Their rapid development after the Revolution of 1959, their near collapse after the fall of the Soviet bloc in 1990, and the nation's struggle to become more self-sufficient created a unique situation from which much can be learned by the rest of the world. Their situation also illustrates the roles of the government, politics, economics, education, and culture in determining the degree to which radical changes are effectively supported and implemented.

Between 1959 and 1990, Cuba's economic development was characterized by rapid modernization, emphasis on social equity and welfare, and a heavy external dependence. Due to the US embargo and its efforts to isolate Cuba economically and politically, President Fidel Castro accepted the Soviet bloc's offer of a favorable trade alliance. These trade advantages allowed Cuba to modernize and accumulate wealth at a much faster rate than most of Latin America. In the 1980's it ranked number one in the contribution of industry to its economy and had the most mechanized agricultural sector of all Latin American countries (Rossett & Benjamin, 1994).

Although the favorable terms of trade with the Soviet Union played a key role in enabling Cuba's development, it also created a serious vulnerability in the nation's economic stability and food security. Sugar cane became the primary export product and the mainstay of the economy, with fully sixty percent of the crop land planted in cane in 1989. The Western-style high-input method of cane production relied heavily on chemical fertilizers and pesticides, for which imports fell 77 % and 62.5% respectively when the Soviet bloc collapsed in 1990. Cuba was faced with a complex, critical dilemma with 11 million people to feed, an immediate 60% drop in food imports, a land resource that was sadly degraded from decades of destructive agricultural practices, and a population that was very out of touch with daily food production (Rosset, 1994). To compound the dilemma, in an effort to force the collapse of Fidel Castro's government, the US further tightened its trade embargo against Cuba, isolating the island from many of the other potential sources of imported agricultural inputs. Feeding the population instantly became the highest priority of the government, agricultural scientists, and the educational system (Bump, 1997). The years following the Soviet crash became known as the "Special Period in Time of Peace."

In some regards, Cuba was uniquely prepared to face this challenge. Although it only has two percent of Latin America's population, it has 11% of its scientists, along with a well-developed research infrastructure and a literacy rate of 98% (Rosset & Benjamin, 1994). These factors have been crucial in the programs undertaken by the Ministries of Agriculture and Education to convert national food production to a sustainable system, as well as educate citizens of all ages to participate in order for their nation and people to survive.

Purpose

The purpose of this study was to investigate how the formal and non-formal agricultural education and extension systems responded to the crisis that occurred when the Soviet Union collapsed. The specific research questions that were addressed are as follows:

- What agricultural education programs and methods were in use in Cuba before 1990?
- What changes in agricultural education and extension methods have been implemented during the "Special Period" of the 1990's?
- What impact, if any, have agricultural education and extension had in improving Cuba's self-sufficiency in food production and protection of their natural resources?

Research Methods and Data Sources

The data for this qualitative research was obtained through personal interviews and participatory observation conducted during three trips to Cuba. Potential subjects for interviews were identified through personal references, and then were contacted by e-mail from Minnesota. Other interviewees volunteered to participate during the visits to Cuba. The interviews were conducted with agricultural educators, extension personnel, representatives of the Ministry of Agriculture, representatives of agricultural associations and urban agriculture projects, farmers, and lay citizens. (The third trip took place shortly after the submission of this paper. Additional information will be presented at the 1999 AIAEE conference in Trinidad and Tobago.) Although current information about Cuba's revolution in food production and agricultural education is quite scarce, a thorough literature review was also included in the research process.

Results and Conclusions

While providing a balanced and adequate diet for all Cuban citizens is still a serious national concern, food production levels have increased substantially and daily caloric intake is once again sufficient for acceptable nutritional standards. Cuban farmers, researchers, and agricultural educators are not only working harder, but are working smarter. In addition, citizen involvement has steadily increased through a variety of projects and training programs.

Formal Agricultural Education Activities

During the crisis period of the nineties, it has been critical that people of all ages become involved in some aspect of food production. This involvement begins with the primary grades. Many elementary schools raise gardens that provide vegetables for their school lunches. They also visit local *organopónicos*, large urban research/production gardens. This active participation "plants the seeds" in the minds of young children, generating interest for growing food and cooperative production.

The most important method of agricultural instruction for junior and senior high-aged children is through the mechanisms of *escuelas al campo* (schools to the countryside) and *escuelas en el campo* (schools in the countryside). In these co-ed boarding schools, students live, study, and work together while contributing to the agricultural sufficiency of the country, building bridges between rural and urban dwellers, and gaining a sense of individual value in the development of their nation (Cogan, 1978). Schools to the countryside were initially established in the 1960's with the concept of sending junior high school students to the country for up to forty-five days to work in agricultural production alongside *campesino* farmers. In addition to creating ties between the urban and rural populations, the goal of these schools was also to build appreciation for the land, and to teach young people the importance of being producers, rather than just consumers (Azicri, 1988). However, after several years of experimentation, it became obvious that this program was unsatisfactory. It created a difficult interruption in the students' academic studies, was insufficient time to truly learn the agricultural skills, and there was little integration of the philosophical lessons that were intended.

As a result, this program was modified to *escuelas en el campo*, in which the schools themselves were actually moved to the countryside. These schools were based upon the philosophy of national hero, José Martí, that "Ideally, we should not speak of schools at all, but rather we should speak of schools as workshops for real life. In the morning, the pen - but in the afternoon, the plow" (Kozol, 1978, p.125). The first school was dedicated in 1970, and by 1976, over four hundred were established, each with a capacity of at least five hundred students (Kozol, 1978). Students spend three to four hours each day in agricultural (and in some cases, industrial) production work, and four hours completing their academic studies. During the Special Period, many students opt for a six year plan, completing both junior high and high school at the school in the countryside. Schools compete against each other for the highest yields and greatest production improvements, thus providing strong motivation for efficient management. At the beginning of the Special Period, many predicted that Cuba would be forced to cancel its *escuelas* *en el campo* program due to the severe economic constraints. However, the students have met the challenge by improving yields so much that the schools are now largely self-supporting. During 1998, numerous schools have expanded their production to include livestock, providing meat, milk, and eggs for the students.

These unique schools also serve as teacher-training centers where future teachers receive intensive experience. Cogan (1978) states, "By striving to fulfill these needs [of the nation], the *escuelas en el campo* have developed innovative curricula, methods of teaching, and pedagogical research. They are in effect laboratories where solutions to educational problems facing the developing society can be tested" (p. 31). Many students who graduate from these schools continue agricultural studies at the university and post-graduate levels, creating a population of highly educated farmers.

An important long-term contribution of the *escuelas en el campo* has been the creation of a national population with a general understanding of agriculture, which has proved invaluable during the Special Period. When Soviet petroleum imports plummeted by 50% and repair parts for farm implements were no longer available, it became necessary to rely heavily on a human workforce. Since a large portion of the urban population had formerly attended *escuelas en el campo*, basic agricultural knowledge was common among the citizens. As a result, hundreds of urban gardening programs and volunteer agricultural brigades in the countryside quickly formed to assist in meeting the nutritional needs of the nation (Rosset & Benjamin, 1994).

As a result of the sudden food crisis and loss of agricultural inputs, sweeping changes were implemented in Cuba's food production system, called "the Alternative Model." This low-input, sustainable system promotes crop diversity rather than monocropping, organic fertilizers and "biofertilizers" instead of chemicals, and biological pest control versus synthetic, toxic pesticides. Furthermore, animal traction is substituted for tractors due to the loss of petroleum and repair parts, and planting is planned based upon seasonal rainfall patterns rather than reliance on irrigation. Local communities are closely involved in the production process, reducing the migration to the cities. Since a significant amount of food is produced by private farmers (individual peasant farmers and cooperative members, as opposed to state farms), the Alternative Model focuses heavily on promoting their activities and success, thereby returning to the importance of the family farmer. (Rosset, 1994).

In response to the need for more agronomists trained in local food production problems, outreach and extension programs were expanded, as well as recruiting more agricultural university students. Cuba currently has 600,000 college graduates, and 22,000 of these have degrees in agricultural sciences. In 1996, there were 24,000 agronomy engineers located in every area of the country and serving farmers of all sizes (Ramirez, 1997).

An excellent example of an agricultural education institution in Cuba today is the Instituto Superior de Ciencias Agropecuarias de Habana (Higher Institute of Agricultural Sciences of Havana - ISCAH). It was moved to the countryside in Havana Province in 1976 to allow a closer link between studies and production (Joa, 1998). ISCAH averages 2000 undergraduates, 400-500 graduate students, with 400 international students from 36 different nations. Fifty percent of the students, 51% of the staff, and 60% of the professors are women, an excellent example of increased gender equity in Cuba.

The three principal goals of ISCAH are academics, research, and extension (Capó, 1998). The emphasis of the institute's pedagogy is to create links between study and work. The philosophy is to train students in the conditions of work and production. As Dr. Matías Ramirez explained, "We don't need agronomists behind a desk." As in most countries, after completing their studies, many students don't want to work the land. So the university teaches them in a production environment. The five-year program of study includes two years of placement in production on one of eleven university teaching farms and/or working with an individual farmer. This allows the students to gain first-hand experience and knowledge from the farmers, as well as allowing the farmers to learn of new techniques from the students. This is one informal method of disseminating knowledge and technology between the university and the farmers. The university also offers alternative programs of study and specialty studies which allow students to continue their employment and create a program of studies which incorporates their workplace. This especially encourages adult and non-traditional students to continue their education (Ramirez, 1997; Joa, 1998).

The university's teaching farms also have strong links with the neighboring communities, which have been further strengthened during the Special Period. Local farmers are free to attend classes, workshops, special agricultural activities, in addition to cultural and other educational events which are also open to the public (Capó, 1998). Recreational facilities also make the university farms attractive to the community. The presence of the farming schools in rural mountainous areas has encouraged people to move from the cities and settle in the countryside, a reverse migration that is strongly promoted by the government and the universities.

Closely linked to the university teaching units are the National Association for Small Farmers' (ANAP) schools for private and cooperative farmers. ANAP works closely with other organizations, including the Center for Sustainable Agriculture Studies at ISCAH, the Latin-American Consortium for Agroecology and Social Development, and the Cuban Organic Agricultural Association in the establishment and operation of these special schools. A three-part distance education curriculum has been developed, along with on-site participatory training at the schools. The instruction enables farmers to implement the sustainable methods of the Alternative Model of production and offers technical support during the transition.

Non-Formal Agricultural Education and Extension Activities

Círculos de Interés (Interest Circles) are utilized to promote agricultural education and vocational awareness, to integrate schooling with productive work life, and to bring together young students and professionals. Students participate in science and technology activities, such as animal science, soil chemistry, etc. (Fagerlind, 1989). Teaching methods have been altered within the last year to present a more holistic, systematic perspective of agriculture. For example, rather than teaching about veterinary medicine, agronomy, and environmental sciences individually, integrated activities are now incorporated that build upon one another and demonstrate the interdependence of these agricultural fields (Funes, 1998). Other special events, such as the EcoJoven (EcoYouth) camp sponsored by the Cuban Association for Organic

Agriculture promote agricultural and environmental education among young people through active participation and community activism.

Urban agriculture has played an increasingly vital role in Cuba's progress towards self-sufficiency in food production. Education has been a crucial element in this successful community movement. Urban agriculture has adopted numerous forms, including large, state-owned *organoponicos (*research and public sale gardens), private gardens, and *huertos populares* (popular gardens). "Popular gardens" are family or community gardens, planted on small parcels of land that is owned by the state, but loaned perpetually without charge, as long as it is maintained in food production. In 1995, there were 26,600 of these garden parcels in Havana alone, with that number steadily increasing (Chaplowe, 1996). Men, women, and children alike participate in these cooperative production projects.

The universities are very active in providing technical assistance and training for the urban agriculture programs. In 1998, the National Commission of Urban Agriculture was established to coordinate and link the network of urban agriculture organizations and clubs that have formed during the Special Period. In conjunction with the Ministry of the Interior, a delegation of scientists, including specialists in tropical agriculture, livestock, fruits, poultry, pork, rice, etc., was created to provide technical assistance to the gardening groups. Neighborhood meetings and pubic workshops are held to educate about techniques such as making compost, applying biopesticides, choosing the best backyard livestock project, and many other topics. Livestock health training and on-site inspections assist citizens in successfully raising small livestock (rabbits, chickens, ducks, goats, pigs, etc.) in small spaces. If there is insufficient space for a garden plot, residents may be instructed in raising patio plants and herbs (Ayala, 1998).

Education is also provided by the many horticulture clubs that have formed during the 1990's. These enable gardeners to pool their knowledge, experience, and resources and to disseminate them among the community. They often trade and share tools, seeds, produce, and ideas; organize public education events and workshops, and establish model garden plots (Chaplowe, 1996; Sanchez, 1995).

In addition to education and increased food productivity, these gardening projects have done much to improve community solidarity and cooperation. Areas that were once abandoned or filthy have been transformed into green, productive plots that the community is proud of. Senior citizens who participate find gardening to be a form of occupational and emotional therapy. This has been implemented on an institutional scale at the Hogar de Santovenia, a senior citizens home in Havana. The elderly gardeners now produce enough vegetables for their 500 residents, another seniors' home, and a children's hospital (Sanchez, 1995)!

Organizations such as the Cuban Association for Organic Agriculture conduct additional educational activities, including the maintenance of a mobile library that serves farmers in all areas of the country. Other community education projects have been initiated by individuals, such as a food preservation center in Mariano municipality that instructs citizens in canning, drying, and other methods of preserving their produce to supplement the year around availability of food. These and other varied activities have done much to promote agricultural awareness and competency among Cubans.

Educational Importance

The issues that surround Cuba, as well as other developing countries, raise some perplexing questions and implications. Is "developmentalism" as an ideology always appropriate? Is "modern" science and technology always the best solution to a developing nation's problems? By adopting Western agricultural methods and developmental theories, Cuba not only became tremendously dependent upon external sources, but placed the welfare of the entire nation in jeopardy. The United States is also on this same agricultural treadmill, with ever-increasing costs of production and the declining sustainability of production. With less than two percent of our population currently involved in food production and a deplorable level of agricultural illiteracy within the general populace, how would our nation fare if faced with a similar crisis, such as sudden loss of petroleum, massive weather calamities, or a war in our homeland? Would we be able to use our creativity, high level of education, and determination to survive and become self-sufficient as the Cubans have been striving to accomplish?

The experience of Cuba offers a sobering message for the United States, as well as the rest of the world. Their intensive agricultural education and extension programs and nationally implemented measures certainly merit further investigation. The Cuban experience may be helpful in improving our levels of agricultural literacy in the United States, and there are certainly lessons which could be applicable or adaptable for other developing nations. This study illustrates the critical role that agricultural education plays in national food security, with the goals of building agricultural literacy, awareness, and efficient production. As the Cuban experience demonstrates, our very survival may depend upon it.

References

Azicri, Max. (1988). Cuba: Politics, economics and society. London: Pinter Publishers.

Bello Pausa, Evelio. (1997). Asociacion Nacional de Agricultores Pequenos. Lecture/interview.

Bump, J. (1997). Compost heaps - The highest state of socialism. Connection to the Americas, 14 (7), 3.

Capó, J. (1998). Instituto Superior de Ciencias Agropecuarias de Habana. Personal interview.

Chaplowe, S. (1996). http://cityfarmer.org/cuba.htm.

Cogan, J. (1978). Cuba's schools in the countryside: A model for the developing world?" Phi Delta Kappan, 60 (1), 30-32.

Fagerlind, I. & Saha, L. (1989). Education and national development: A comparative perspective. Oxford: Pergamon Press Ltd.

Funes, F.M. (1998). Asociacion Cubana de Agricultura Organica. Personal interview.

Kozel, J. (1978). Children of the revolution - A yankee teacher in the Cuban schools. New York: Dell Publishing Company.

Joa, J. (1998). Insitituo de Ciencias Agropecuarias de Habana. Personal interview.

Leon, R. (1998). Personal interview.

Ramirez, M. (1997) Instituto de Ciencias Agropecuarias de Habana. Lecture/interview.

Rosset P. & Benjamin, M. (1994). The greening of the revolution. Melbourne: Ocean Press.

Sanchez, R. (1995). Los ancianos tambien pueden. Agricultura Organica (1) 3, 2-3.

Sanchez, R. (1995). Nace una idea. Agricultura Organica (1) 3, 3-5.

A Description of a Small Scale Farm Systems in Lower Casamance, Senegal: The Initial Programming Step

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Abstract

The purpose of this study was to provide diagnostic programming information for extension stakeholders in the lower Casamance, Senegal. The village of Loudia Ouloff was purposefully selected as being a representative village in one of the five agricultural zones in the region. Selected data for this socio-economic analysis of small, limited resource farms were collected from the 1984 agro-socioeconomic survey (SAIR,1984). Verification and supplemental data were collected by one of the researchers during the summer of 1996. Linear programming was used to conceptualize and to model the nature and complexity of the small farm systems. The average size of the work force by household was five. The family constituted the main source of labor for all activities. By maximizing cash income after satisfying consumption requirements, palm oil and fruit sales netted the family 92,945 francs CFA ($265). Based upon the availability of raw materials and a stable market price (500 francs CFA), a basket making enterprise holds promise as a scenario for boosting family income. Basket making is a female activity that generally happens during the dry season.

Introduction

The west African country of Senegal has an agricultural economy. In 1980, agriculture accounted for 28% of the gross national product and provided employment for 80% of the economically active population. In recent years, cereal production in Senegal has not been sufficient to meet consumption needs and most of the production was generated by the small holders which represent 60 to 70% of the farming population. The general crisis in Senegalese agriculture during the last two decades and in Lower Casamance in particular derives from an insufficient adaptation of traditional farming systems to agroclimatic changes (decreased rainfall, shortening of seasons, degradation of the edaphic milieu) and an evolution of the socioeconomic environment (population growth, government policies, trade conditions, development of social dynamics). This unfavorable agro-socioeconomic context negatively influenced the production strategies of small-scale farms and family livelihood systems.

It has been recognized and accepted by the government and development agencies that agricultural and social changes in the production systems of these farms, based on the utilization of new or modified technologies, is an important strategy and a challenge for the agricultural, economic and social development of the country.

According to Merrell-Sands (1986), Farming Systems Research and Extension (FSR&E) is characterized as being farmer-centered and systems-oriented. Interdisciplinary teams consisting of applied social scientists and biological scientists, draw upon a broad base of existing knowledge in the problem-solving process. These teams communicate continuously with village-level households as they conduct on-farm research in an effort to provide solutions to complex village-based problems. The Steps of FSR&E involve diagnosis, design, testing and dissemination. (Hildebrand & Russell, 1996).

The diagnosis of a need has been defined as the difference between a current condition and the condition that is desired (Boyle, 1981). According to Bennett and Rockwell (1995), such conditions generally occur within a social, economic, or environmental domain. Due to limited resources in developing countries, the economic domain is crucial in the village-level development process. In Senegal, a fifteen-year drought has contributed to food shortages in the lower Casamance (southern region) of the country. The over-riding concern of small-scale, limited resource farmers in the area is to sustain family rather than to produce agricultural products for export (Lo, 1997).

Background Information

The Lower Casamance covers an area of 7,300 km^2 in southern

Senegal from the Soungrougrou Valley to the Atlantic Coast. The region's subguinean climate receives a strong maritime wind and is characterized by two seasons: a dry season from November to May and a rainy season from June to October, with August receiving the heaviest rainfall. The Atlantic Ocean has a dominant influence on the hydrology of the region because of its very low elevation and the current rainfall deficit. Salt water frequently flows as far as 220 km upstream from the mouth of the Casamance River. The region has an extensive network of lowland swamps which facilitate even further penetration of the sea water.

The Lower Casamance is essentially an agricultural region and plays an important role in Senegal's agricultural development policy. Groundnuts, rice, millet/sorghum and crops are grown in the region. Different types of livestock are found in the Lower Casamance, such as N'dama cattle and Guinean species of sheep, goats and pigs. However, very few donkeys and horses exist in the region. During the last ten years the mean rainfall has averaged from 1,000mm to 1,100mm in Ziguinchor (compared to the normal 1,500mm). This average, however does not reflect significant inter-annual variations. Each of the three districts in the Lower Casamance has suffered several years of drought over the past ten-year period, so severe as to place the agricultural system at risk. As a result of the drought, there has been a decrease in the total area cultivated, consequently the production of cereal crops has decreased.

Purpose and Objectives

The purpose of this study was to provide diagnostic information for extension stakeholders in the lower Casamance, Senegal. The specific objectives of this study were to: (1) identify the characteristics of a representative community and household; (2) develop an economic model of a representative household, and to (3) determine the influence of an alternative scenario to increase the family income of a representative household.

Methods and Materials

This study was a part of a broader study that used linear programming (LP) to conceptualize and model the nature and complexity of the small farm system. Due to a great deal of heterogeneity in social organization (division of labor within a household) and agricultural production (upland vs. lowland crops and the use of animal traction), a Farming Systems Research and Extension (FSR&E) team from the Senegalese Institute of Agricultural Research (SIAR), divided the lower Casamance into five agricultural zones. The village of Loudia Ouloff was purposefully selected for this study as being a representative village for one of the five agricultural zones in the region. Selected data for this socio-economic analysis of small, limited resource farms were collected from the 1984 agro-socioeconomic survey (SAIR,1984). Verification and supplemental data were collected by one of the researchers during the summer of 1996.

LP allows one to predict the response of family livelihood systems to improved technologies, providing valuable feedback to researchers, policy makers, local organizations (public and private) and technology change agents. Linear programming used sets of linear equations in an optimization procedure that allocated scarce resources among competing alternatives to maximize specified objectives. The standard form of a LP model is composed of three sections: (1) an objective function, (2) resource constraints, and (3) activities or competing alternatives. According to Timmer, Falcon, and Pearson (1983), linear programming solutions are beneficial in understanding changes in a farming systems environment. Data were analyzed using the Quattro-Pro 6.0 software program.

Results

Loudia Ouloff, a village located south of the River Casamance, represented a traditional Diola system. The traditional Diola live in households (butong) composed of conjugal units with autonomy in economic matters. Villages were organized in groups of individual residential units (eluf). Households followed an intensive aquatic rice production system with a marked division of labor by task. The heavy work of dike building and ridging was performed by men. Land was nominally owned by patrifilial groups, but usufruct rights to land were assigned with the conjugal unit under the direct responsibility of the head of the compound. Women, as a rule did not own land. The village of Loudia Ouloff had a population of 306 people with 43 households. The average size of the work force by household/farm was five. The village had 172 hectares of community land.

The representative household was comprised of nine people (three men, four women, and two children). The average size of the work force by household/farm was five. The family constituted the main source of labor for all activities. During the peak periods (plowing, transplanting, and harvesting), the household could hire a limited amount of labor if cash was available. Fuel, medicine and other family needs were purchased from the market. The household activities included crop and livestock production, non-agricultural natural resource extractive activities, and domestic activities.

The average farm size consisted of two hectares of family land for crop production, and three hectares of community land (Table 1). Crops that were produced included rice, groundnuts, maize, sweet potatoes, and cowpeas. The community land provided fruit, firewood, and palm oil, of which fruit and palm oil supplied the main source of revenue to the family. Households followed an intensive, aquatic rice production system, with an average yield of 854 kg/ha. All rice that was produced on the farm was consumed within the household. In terms of livestock, the average farm had six sheep, six goats, a family herd of fifteen cattle and some chickens. The livestock were used for ceremonies and rituals and constituted the main source of manure for crop production. By maximizing cash income, using the linear programming model, after satisfying consumption requirements, palm oil and fruit sales netted the family 92,945 francs CFA ($265). The average farm household could produce 114 liters of palm oil, 242 kg of fruit, and was able to satisfy its consumption needs using the family and community land that was available. The farm household used 207 person-days of the family wet-season labor and 240 person-days (the maximum) of the family dry season labor.

Based upon the LP model, it was apparent that the average household had limited resources but earned substantial revenues from non-agronomic activities such as fruit production and palm oil collection. Increased production was limited due to the lack of land. Labor also constituted a constraint to increased production of palm oil during the dry season. Based upon the availability of raw materials and a stable market price (500 francs CFA), a basket making enterprise held promise as a scenario for boosting family income. Basket making was a female activity that generally happened

Table 1
Description of a Representative Household

Farm resources	
- Family farm size (ha)	2
- Community land (ha)	3
- Family labor (person-day/ha)	700
- Cash available (francs CFA)	6000
- Seeds groundnut (kg)	40
- Seeds maize (kg)	20
- Seeds aquatic rice (kg)	100
- Seeds cowpea (kg)	12
- Seeds sweet potatoes (cuttings)	100
Labor for the different activities (person days/ha)	
- Groundnuts	96
- Maize	94
- Aquatic rice	144
- Cowpea	30
- Sweet potatoes	8
- Palm oil	158
- Fruit production	15
Family consumption needs (kg/year)	
- Groundnuts	83

- Maize	500
- Aquatic rice	602
- Cowpea	30
- Sweet potatoes	46
- Palm oil (liters)	50
- Fruit production	84

Seeds for different crops (kg/ha)

- Groundnuts	60
- Maize	15
- Aquatic rice.	120
- Cowpea	10
- Sweet potatoes (cuttings)	10000

Yields of crops (kg/ha)

- Groundnuts	608
- Maize	554
- Aquatic rice	854
- Cowpea	122
- Sweet potatoes	4600
- Palm oil (liters)	120
- Fruit production	200

during the dry season. The linear programming model showed that female labor during this season was binding. However, male dry season labor was not a constraint. To be successful in this enterprise, the household would need to hire labor to collect raw material and make baskets. Thus, young village males could be employed in this basket making alternative. The acceptability of this innovation depends mainly on the availability of cash which can easily be obtained from the revenues of palm oil and fruit production. The result shows that by hiring labor (50 person days) at the rate of 250 francs CFA ($0.71) per person, the farm can produce 133 baskets, 252.96 kg of fruit, 107.83 liters of palm oil and easily satisfy the family consumption needs. Participation in this enterprise would add 66,500 francs CFA ($190) to the household income, which would increase the total family income to 143,915 francs CFA ($412).

Educational Importance

This study of small-scale farmers in the village of Loudia Ouloff has important implications for future extension programming activities. The community and household characteristics and the economic model of a representative household provide important baseline information on Loudia Ouloff's current situation. Broad economic program goals can now be developed and related programs implemented. As per the alternative scenario examined in this study, a pilot program should be implemented to confirm it's anticipated success.

References

Boyle, P. G. (1981). Planning better programs. New York: Mcgraw-Hill.

Bennett, C., & and Rockwell, K. (1995). Targeting outcomes of programs (TOP) : an integrated approach to planning and evaluation. (Unpublished Paper)

Hildebrand, P. E. & Russell, J. (1996). Adaptability analysis: A method for design, analysis and interpretation of on-farm research-extension. IA: Iowa State University Press.

Institut Senegalais de Recheres Agricoles. (The Senegalese Institute of Agricultural Research). (1984), La rechere sur les systemes de production en Basse Casamance. (The research of production systems in the lower Casamance (region)). Dakar: Department de Reserche sur les Systemes de Production et le Transfert de Technologies en Miliieu. (Department of Research on Production Systems and Technology Transfer in Milieu).

Lo, M. A comparison of on-farm research and extension methods in small scale farm systems in Lower Casamance, Senegal. Unpublished master's thesis, University of Florida, Gainesville, FL.

Merrell-Sands, D. (1986). Farming systems research: clarification of the terms and concepts. Experimental Science. 22: 87-104.

Timmer, C. P., Falcon, W. P., & Pearson, S. R. (1983). Food policy analysis. Baltimore, Md: The Johns Hopkins University Press.

Session O Extension Models

March 23, 3:30 - 5:30 p. m.

Session Chair - Steve Maximay

Location: Laventille Room

TITLE: Multi-Disciplinary National Extension Program: A Public and Private Venture
AUTHOR: E. Dean Baldwin, Robert N. Wisner, E. Neal Blue
The Ohio State University
DISCUSSANT: James Christiansen

TITLE: The Extension Paraprofessional Model: Relationship of program effectiveness with paraprofessional teaching style and personality profile
AUTHOR: Katherine L. Cason, Richard L. Poling
Clemson University
DISCUSSANT: James Christiansen

TITLE: A Comparison of Farm Systems on Diverse Topography in Trinidad
AUTHOR: Wayne Ganpat, Joseph Seepersad
University of the West Indies
DISCUSSANT: Abdillahi S. Alawy

TITLE: The Potential of Participatory Rural Appraisal (PRA) Approaches and Methods for Agricultural Extension and Development in the 21st Century
AUTHOR: Anna Sutherland Toness
Texas A&M University
DISCUSSANT: Abdillahi S. Alawy

Multi-Disciplinary National Extension Program: A Public and Private Venture

E. Dean Baldwin, Robert N. Wisner, and E. Neal Blue*

Abstract

Extension education is at a philosophical crossroad. To meet the needs of its clientele, extension services must choose between a separate non-integrated state-focused model or nationally/internationally focused extension programs. During the last quarter of the 20th century, there occurred many changes challenging the state-focused model. Agribusinesses evolved into relatively large specialized firms which demand access to specialized information through non-traditional delivery systems. Also, businesses now operate in a more risk-prone and changing world environment. States working individually do not have the resources and expertise to meet all needs.

This paper illustrates how a multi-discipline public and private task force was organized to design and deliver, using innovative transmission and interactive educational systems, a national and international futuristic extension and applied research program for the U.S./Canadian grain industry. The Managing Risks and Profits program eliminates duplication of effort among states. Research focuses on financial and cost analyses, insurance products, pre-and-post-harvest pricing strategies, and cash flow obligations by type of firm. Within one year, 15 subject matter chapters and a software program were written, a CD-ROM was created, a book was released, a web site was created, in-service training sessions were conducted, and clientele accessed the information through innovative and traditional outlets. On-going research generated information that was incorporated into the extension program and was released through journal articles and conferences. Anecdotal evidence suggests that the program is of the highest quality. Substantially more was produced by the group than could have been produced by summing total output from uncoordinated individual states.

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Multi-Disciplinary National Extension Program: A Public and Private Venture

E. Dean Baldwin, Robert N. Wisner, and E. Neal Blue

Introduction and Problem

Extension education is at a philosophical crossroad. To meet the agricultural needs of its clientele, federal and state extension services must choose between a separate non-integrated state focused traditional model or nationally and internationally focused extension programs. Prior to the last half of the 20th century, the state focused model worked very well. It served the educational needs of most agricultural producers who managed relatively small multi-enterprise farms.

Within each state, there were adequate resources and expertise to meet the educational needs of most farm families. A reward system was in place to compensate outstanding state programs and individuals. Additional state and federal funds flowed into programs of excellence and distinguished individuals were recognized by the state and national extension services and by public and private professional organizations.

During the last quarter of the 20th century, there occurred many changes which challenged the state focused extension model. Farms and agribusinesses evolved into relatively large specialized firms. These businesses demand immediate access to specialized information through non-traditional delivery systems. Some want to study the educational material in their own offices, require access to information through the Internet, or want a direct consulting experience rather than obtaining information by attending traditional extension meetings. Most want to apply what has been learned through the use of computer models and/or other applications. Because of limited resources and the reward system, it is difficult, if not impossible, for an individual state specialist to simultaneously create and maintain a contemporary Internet site, not-for-pay consulting service, and software or other applications.

As a further complexity for the state specialists is the recognition that producers and interrelated agribusinesses now operate in a more risk-prone and changing world environment. Most of the output is sold into a national market where prices are influenced by international events, global and cultural policies, and world competition. Evidence suggests that both production and prices are becoming more volatile. Increased specialization of enterprises on farms also increases the need for more risk management programs and strategies.

Satisfying the demand for more complex and internationally based information is a challenge for the extension specialists working independently at the state level. Financial resources in any one state are inadequate to meet all of the educational needs, and no one individual has the expertise to create a program that encompasses the integration of production agriculture, international competition, futures and options markets, cash market alternatives and strategies, yield and revenue insurance products, climatic conditions, and policy, finance and legal issues. Recognizing these challenges, some federal competitive grants require interstate cooperation and partnering with the private sector. Blue ribbon panels such as the National Research Council suggest that the land grant system must increase its relevance to contemporary food and agricultural issues, integrate and revitalize the teaching, extension, and research services, develop regional and national programs, and cooperate with the private sector (Phillips).

Although these incentives and directives are in place, there is a reluctance on the part of individual extension personnel and states to use materials and services that are produced in other states and/or to create models for national programming efforts. From most perspectives, the reward system favors a state that is recognized as the "center" for the programming effort and the individual who has the genius to create and direct this program.

Objectives

The objective of this paper is to illustrate how a multi-institutional and multi-discipline task force was organized to design and deliver, using innovative transmission and interactive educational systems, a national futuristic extension and applied research program for the national grain industry. Specifically, this paper demonstrates how a group of 18 extension and research scientists from seven land-grant universities and the United States Department of Agriculture organized and partnered with the private sector to meet the needs of the interrelated grain industry as it enters the 21st century. The challenges facing the grain industry are reported, the structure of the program is highlighted, and the challenges and accomplishments of the program are examined. It is argued that the output from this national extension program is substantially greater than the sum of the parts from comparable individual programs.

Extension and Applied Research Program for the Nation's Grain Industry

Challenges for the Grain Industry

The production and marketing environment facing feed grain, wheat and oilseed producers has changed dramatically since the early 1990's. Major developments include climatic changes, new U.S. farm programs, trade agreements, economic problems and instability in the Pacific Rim, and new risk and profit management tools. Weather remains one of the most important uncontrollable variables in agricultural production systems. A recent rash of extreme weather conditions across the Midwest and South included abnormally cool-growing-season temperatures in 1992, unprecedented heavy growing-season rainfall and flooding in 1993, record-breaking winter cold, snowfall, and subsequent spring flooding in 1997, and the el nino effect and the record high mean temperature in 1998. Because of the above changes, many climatologists hypothesize that weather patterns and thus yields are becoming more variable (Taylor and Andresen).

Along with the changes in climatic conditions, agricultural policies are also changing. The Federal Agriculture Improvement and Reform Act of 1996 (FAIR; also known as Freedom-to-Farm Act) eliminated the long-standing deficiency payment which generated increased government payments when prices declined. The deficiency payments have been replaced by payments that do not vary with price, and which will continue through 2002. In 1998, a contradiction to the FAIR policy occurred when the federal government increased payments to farmers to $12.1 billion in response to low prices and production shortfalls in selected U.S. regions. Whether such payments will be forthcoming in the future is an uncertainty.

Impediments to short-term shifts of acreage from one crop to another, arising from previous government programs, have been eliminated. The potential for large changes in planting patterns through the FAIR act was illustrated in 1996 by double and triple digit percentage increases in corn planted acreage in a number of southern states. Large increases in 1996 spring wheat acreage and 1997 soybean plantings also are a direct result of new agricultural legislation.

New government programs also have eliminated the Farmer Owned Grain Reserve that previously helped to temper the impacts of weather shocks on prices. While a small strategic wheat reserve still is mandated, the FAIR act largely eliminates government grain storage. When crop production is relatively large, the lack of a grain reserve policy may produce a greater downward pressure on prices than in the past. In times of low crop production, a lack of reserve stocks cause extreme upward price volatility.

The North American Free Trade Agreement (NAFTA) and the General Agreement on Trade and Tariffs (GATT) provide improved access to foreign markets and have set the stage for accelerated growth in Mexico's economy and grain demand. The other side of the picture is that increased dependence on foreign markets carries risk. NAFTA and resulting changes in Canadian agricultural policy have at times increased the competition U.S. grains face from our northern neighbor, both in our domestic wheat and feed grain markets, and in Mexico. Other dimensions of risk associated with heavy dependence on foreign markets can be illustrated with the following examples: (1) loss of the once-large Soviet grain market, (2) the Mexican peso crisis, (3) China's cancellation of wheat purchases because of disease concerns (4) China's abrupt shifts in corn exports in both directions within the last four years, and (5) the Asian economic crisis of late 1997 and 1998.

Recent U.S. policy changes, while eliminating deficiency payments and ad hoc disaster programs, signaled that Congress is willing to subsidize new types of crop insurance that insure revenue (dollars per acre) rather than just yields. Since the profit equation includes yields, prices and costs, new types of insurance have been designed to help ensure a minimum level of gross income per acre rather than just insuring yields. Other new private-sector tools available to help manage risks and profits include the corn yield futures and options markets. New cash grain marketing alternatives and strategies are also appearing. These choices introduce new legal risks involving contracts and financial liabilities (Wisner and Good).

Managing Risks and Profits National Program

Recognizing that no one individual or state could address all of the above issues, two individuals who had worked together on a former North Central Regional Ad Hoc Grain and Livestock Committee conceived the idea to develop an educational program for the national grain industry. To begin the process, they acquired "seed" money from their respective universities, Ohio State and Iowa State, and from the Farm Foundation. With the seed money in hand, they enlisted the help of other agricultural economists, attorneys, climatologists, agricultural educators, and sociologists from seven land-grant institutions. Once organized, the extension and research scientists incorporated the recommendations from the National Research Council Board on Agriculture to create the Managing Risks and Profits (MRP) national grain program. To fully fund the program, grants were acquired from other private sector organizations and from the United States Department of Agriculture - Risk Management Association. Private sector partners contributed by accepting some financial risks. Total funding for a two year period did not exceed $180,000 "out-of pocket" funds. Most of the funds were used to support a post-doc research staff member, to travel to in-service training sessions and national meetings, and to develop software and educational materials.

MRP eliminates duplication of effort and strengthens multi-state and multi-institutional partnerships by using the extension and research expertise of public and private institutions in the creation and delivery of this national educational effort Research focuses on insurance products and their probabilistic impact on gross and net revenues individually and jointly with pre-harvest and post-harvest pricing alternatives. Research results are reported at national and international conferences, are incorporated into the educational materials, and are released as peer reviewed articles. A partial listing of articles and conferences appears in the reference section of this paper.

Based on the research results and extension experiences, eighteen authors and reviewers created a 15-module course focusing on such diverse topics as the new risk environment, global climatic changes, financial management principles, legal considerations in grain contracting, probability concepts and applications, crop yield and revenue insurances, components of price and basis risks, price and yield futures and options, and guidelines for developing risk management strategies for individual farm businesses. Because of the quality and quality of resources, this task was completed within a few weeks.

In collaboration with a private software firm, Miller and Associates of Metamora, Illinois, logic from the subject matter was transformed into a risk management software program. This software empowers the individual to apply what is being learned to his/her own farm business. MRP software allows the user to estimate: cost of production and family living expenses; cash flow positions, risk positions using futures, options, cash markets, and insurance products. It answers "what if" questions and can be used as both an educational tool and a research model.

Since Miller and Associates are experienced agricultural programmers, the model was developed within a three month period at an "out-pocket-cost" of less than U.S. $13,000. Miller and Associates retain ownership to the code and are free to further develop and maintain the software for sale. If there is a viable demand for this product, it will be revised and maintained for future use. Extension economists are free to release the current model as freeware to their clientele.

By collaborating with a second private firm, Data Transmission Network (DTN)/FARM DAYTA, Inc., the 15 modules were delivered by satellite transmission directly into home and business offices in 29 states and six Canadian provinces. Text, tables, photos, colored graphs, examples, and homework assignments were transmitted weekly to subscribers who could ask questions via a toll-free telephone number. General questions were answered via the transmission network, while authors responded directly to specific firm-oriented questions.

The information is also released through a MRP web site, http://idea.exnet.iastate.edu/idea/marketplace/risk-mgmt/, at Iowa State University. Those who do not have access to DTN but are Internet users can access the educational materials, acquire the software, "surf" to other related risk and marketing sites, and keep abreast of new MRP releases. Since the expertise was in place and resources could be focused on this project, this web site is being maintained and supported for all land grant professionals and for their clientele.

For those without access to these networks, the authors transferred the 15 models and other supporting data to a CD-ROM. Written in HTML, the modules and other supporting materials are accessible via any web browser and supporting software packages. End users may peruse the educational materials and access the software program. Extension agents can print out the materials and access PowerPoint programs to create traditional meeting and learning centers for general audiences. Finally, for the traditional learner, a MRP textbook was written. The book contains all tutorial information and the disks for the MRP program.

Working together, the authors provide in-service training sessions for county agents, other educators, and business persons. Meetings were conducted for clientele in Ohio, Illinois, Iowa, Kansas, Missouri, South Dakota, Pennsylvania, North Dakota, Michigan, Indiana, and Wisconsin. Educators and business persons had access to the region's state specialists and researchers, opportunity to develop risk management programs for traditional audiences, and the opportunity to receive training in the use of the software program.

Challenges and Accomplishments of this Program

Currently, the MRP program is in its second year. During the first year, educational materials were developed, the CD-ROM was created, the book was written, and the software program and web site were designed and tested. Since all products are currently being released to the public, DTN broadcasts are on-going, and in-service training programs are being conducted, statistics that demonstrates specific accomplishments or impacts are unavailable. However, anecdotal evidence is very strong. Orders for the CD-ROM and the book are brisk. Expectations are that more than 1000 copies of each will be used by our extension clientele and by students in the classroom. In-service training sessions are filled to capacity, and requests for additional meetings are forthcoming. Although presented twice each year, DTN/FARM DAYTA subscribers continue to sign up for the MRP special service. County agents and agribusinesses are using the training materials and software to work with their clientele and customers throughout the nation.

Evaluations from the in-service training sessions are very strong. Extension agents and other participants value the interaction with inter-state specialists. Because of the complexities and volume of materials, participants have requested that the training session be extended from one-and-half to two full days. Requests for additional sessions occur regularly.

George Hayes, manager of Cargill, Inc. In Pipestone Minnesota, stated in a telephone conversation that this is "an excellent program." Since he had viewed the materials over DTN, he encouraged us to release the material via other media for use with his non-DTN clientele. Similar responses have been received almost daily. Steven Halbrook of Farm Foundation stated in a letter that the quality "of the MRP products and reports are excellent." Henry Bahn, National Program Leader, Economic and Community Systems, CSRESS-USDA characterized MRP as a "national extension/research based program which is using state-of -the art delivery and communication methods. Because of its timeliness, breadth of subject matter, and diverse audience appeal, this program reflects excellence." Gene Gantz of Rail and Hail, LLC stated that , "this risk management educational tool will be invaluable in helping crop farmers develop integrated risk management plans to replace the discontinued federal price deficiency and disaster payment programs. The model and teaching methods will set new standards for growers, the insurance industry, and other businesses." During the last year, authors have been invited to participate in conferences with their peers and clientele. Among others, presentations have been made at the

Applied Commodity Price Forecasting and Market Risk Management (NCR-134) Conference, American Agricultural Economic Associations National Meetings, USDA-RMA Risk Management Conference, American Farm Bureau Commodity Roundtable and National Meetings, and at a series of seminars in Japan sponsored by the Tokyo Grain Exchange.

Although much has been accomplished in a short time period, creating and maintaining a national program is a challenge. Most authors met their deadlines and created a quality product; however, the two directors had to carefully oversee the process and careful editing had to occur. After the 15 modules were written, most of the authors did not continue to be full partners in the process or did not accept full ownership of the program. The two directors produced the CD-ROM, the book, the web site, generated much of the research, and made most of the presentations to peers. To have an effective national program, the ownership problem must be overcome. One solution may be to establish rotating national committee chair positions with specific objectives where the results can be presented in individual states and can be recorded in personal annual reports.

At times, supervisors questioned whether so much effort should be going into a national/international project rather than into a state effort. Revision in the reward system may overcome this problem as well. That is, states now receive most of their funding from state governments and from political support of local clientele. The question becomes, how can a national program demonstrate that there is direct payoff to local clientele and to those government bodies that fund such activity?

Conclusion: National Extension/Research Output Substantially Exceeds Output from Individual State

Although untested, it is our conclusion that this national program involving public and private partnerships produced more high-quality output than could have been produced in total by states working independently. In a one-year period, 15 subject matter modules or chapters were written, a software program was generated, a CD-ROM was created, a book was released, an on-going web site was created, in-service training sessions were conducted, and clientele had access to the information through innovative and traditional outlets. On-going research projects generated vital information that was incorporated into the extension program and was released via journal articles, proceedings, popular press, and at conferences.

Anecdotal evidence from end users suggests that the subject matter and software program are of the highest quality. Agricultural educators and sociologists are currently evaluating the program; thus, statistical analysis to validate the anecdotal evidence will soon be available. The "out-of-pocket" cost to produce this program has been minimized. The software program has been produced for U.S. $13,000 for example. Selling the CD-ROM for U.S. $25.00 per copy recovers reproduction costs, and selling the textbook for U.S. $15.00 per copy recovers the printing costs.

It is our conclusion that no one state had the expertise or the quantity of resources to accomplish the above tasks. Further, without coordination, combining the individual parts would not have resulted in an integrated risk management product. Without the assistance of our private partners, the software could not have been written and maintained for such a low cost, and we could not have offered the subject matter to clientele in 29 states and six Canadian provinces.

References

Baldwin, E. Dean, E. Neal Blue and Robert N. Wisner, "Risks and Profits Strategies for Grain Producers in Selected Regions of the U.S. A series of Case Studies", Abstract published in the **AJAE**, in press December 1998.

Blue, E. Neal, Marvin Hayenga, Sergio Lence, and E. Dean Baldwin, "Futures Spread Risk in Hedge-To-Arrive Contracts", **NCR-134 Conference Applied Commodity Price Analysis, Forecasting, and Market Risk Management,** pp 25- 34, Proceedings, Chicago, Illinois, April 20-21, 1998

Blue, E. Neal, E. Dean Baldwin, and Robert N. Wisner, **Managing Risks and Profits Grains Tutorial and Software**, CD-ROM, December 1998.

E. Neal Blue, Marvin Hayenga, Sergio Lence, and E. Dean Baldwin "Futures Spread Risk in Soybean Hedge-Top-Arrive Contracts, **Agribusiness-An International Journal**," currently in press, August 1998.

Phillips, Michael J.,"Land Grant Colleges of the Future" Recommendations of the National Research Council, **CHOICES**, pp 2-6, Second Quarter 1997.

Taylor, S. Elwynn and Jeffrey A. Andresen, "Climate Changes: Impact on Grain Yields, Price Variability, and Risk Management," **Managing Risks and Profits**, Midwest Plan Services, Ames, Iowa, pp 10 - 17, December 1998.

Wisner, Robert N. and Darrel Good, "Managing Risks and Profits" The New Profit and Risk-Management Environment, **Managing Risks and Profits,** Midwest Plan Services, Ames, Iowa, pp 1- 8, December 1998.

Wisner, Robert N. E. Neal Blue, and E. Dean Baldwin, G. Art Barnaby, Jr., and Daniel O'Brien, "Crop Insurance and Pre-Harvest Pricing of Corn and Soybeans: Case Studies," **NCR-134 Conference Applied Commodity Price Analysis, Forecasting, and Market Risk Management,** pp 89 - 106, Proceedings, Chicago, Illinois, April 20-21, 1998

Wisner, Robert N., E. Neal Blue, and E. Dean Baldwin, "Pre-Harvest Marketing Strategies Increase Net Returns for Corn and Soybean Growers," **Review of Agricultural Economics**, Current in Press, December 1998.

Wisner, Robert N., Dean Baldwin, and E. Neal Blue (Editors), **Managing Risks and Profits Coping with Volatile World Markets**, Midwest Plan Service, Ames Iowa, December 1998.

The Extension paraprofessional model: Relationship of program effectiveness with paraprofessional teaching style and personality profile

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The Extension paraprofessional model: Relationship of program effectiveness with paraprofessional teaching style and personality profile

Introduction

As the innovative theme of "reinventing government" spreads into the 21st century, the Cooperative Extension System will be under pressure to adopt more efficient, accountable, and less expensive means of educational programming. One approach utilized by many systems to achieve the objective of providing cost effective education is the expanded use of paraprofessionals in teaching roles. Wasik (1997) indicated that the most intense debate in arranging for home visiting services, like EFNEP, is whether to employ professionals or paraprofessionals. She also stated that one of the assumed advantages of hiring paraprofessionals salary savings may shrink when the necessary resources needed to support the paraprofessional are added in (e.g, inservice training). In their publication New Careers for the Poor, Pearl & Reissman (1965) state that, while some agencies document benefits and value of the paraprofessional, others encounter negative experiences with ineffective paraprofessionals which make program administrators question the efficacy of this approach. Therefore, the need to identify and select paraprofessionals that require less of these support resources is quite important.

The identification of characteristics of effective paraprofessionals has become one of the major dilemmas encountered when implementing the paraprofessional model. According to Iscan and Nelson (1977), there appeared to be considerable controversy as to what constitutes a successful paraprofessional and what type of individual should be recruited and selected in a paraprofessional role. Programs vary widely in their criteria for choosing paraprofessionals. Criteria for identifying and selecting effective paraprofessionals have tended to emerge out of a trial and error process (Larner & Halpern, 1987), and have included accessibility, available transportation, and being indigenous to the communities in which the paraprofessionals will work (Spindler, 1967; Brand, 1972; Randall, Brink & Joy, 1989). Other authors have looked at a variety of criteria that organizations consider in recruiting and selecting paraprofessionals. The EFNEP trend has been to hire individuals who are indigenous to the target audience with whom they work. Inservice training has been emphasized as a way to provide these paraprofessionals the EFNEP subject matter information that they use in their work.

Yerka's (1974) research and the later research of Cadwaller (1985) and Cadwaller and Olson (1986), as well as the commentary of Giblin (1989) however, questioned whether the paraprofessional's [subject matter] knowledge is her most important characteristic in determining program outcomes with clients. Yerka (1974) found that job persistence, experience, attitude toward work, age, and knowledge of teaching-learning strategies also contributed greatly in explaining variance in program knowledge outcomes. Santopolo and Kell (1976) identified positive attitude, enthusiasm, persuasiveness, self-confidence, commitment, concern and initiative as critical job requirements for paraprofessionals. Iscan and Nelson (1977) identified several personal characteristics of EFNEP aides (now commonly known as program assistants), specifically, the ability to relate with people, attitude toward others and the ability to express, as the highest ranked characteristics important for an EFNEP aide's success. Cormier, Cormier, &Weisser (1984) identified the ability of either a professional or a paraprofessional home visitor to convey warmth and caring, to be empathetic, and to be able to put clients at ease as skills essential to establishing working relationships with clients. Wasik (1993) suggests that personal maturity, good judgment, and interpersonal skills are key considerations in the selection of successful professional and paraprofessional home visitors. However, in 1997, Wasik noted that many assumptions about the characteristics needed by successful by successful paraprofessionals are not based upon empirical studies.

Given the importance of these non-subject matter knowledge characteristics to a paraprofessional's program success, being able to identify individuals that possess these characteristics would help an organization such as EFNEP to hire individuals that would require less support resources from the organization while still being successful. Identifying which personal characteristics of EFNEP program assistants, or potential program assistants, are most closely associated with program success would be valuable information for Extension organizations in making personnel and staff development decisions and, ultimately, making the paraprofessional model operate effectively and efficiently.

Purpose and Objectives

Extension program administrators can benefit from knowing the characteristics of effective paraprofessionals so they can make informed decisions. Two categories of an individual's personal characteristics that are related to interaction with others in a teacher-student relationship are the individual's personal teaching style and personality type. Is a particular teaching style more effective, is a certain personality type more effective? The answers to these questions would be useful in the recruitment and selection process as well as in the development of relevant pre-service and inservice training programs for paraprofessionals.

This study examined the effectiveness of paraprofessionals in working in a state EFNEP program in relation to the teaching style and personality type of each paraprofessional. The study was designed to:

1. Identify the educational effectiveness of EFNEP paraprofessionals' programs and
2. Compare EFNEP paraprofessionals' teaching style and personality profile with their program effectiveness.

Methods

Procedures

The population for this study were the forty-one Extension Expanded Food and Nutrition Education Program (EFNEP) paraprofessionals in South Carolina. Administered by the

Cooperative State Research Education and Extension Service of the U.S. Department of Agriculture, in cooperation with State Cooperative Extension Services, EFNEP has employed paraprofessionals to provide nutrition education to limited resource audiences in the 55 states and territories of the United States of America since 1969. A profile of the audience reached by the EFNEP paraprofessionals in South Carolina in 1997 revealed that the 1105 graduated EFNEP participants were 63% rural, 53% with incomes of less than 50% of poverty level, 56% receiving Food Stamps, 32% Caucasian, 66% African-American, 1% Asian, and 1% Hispanic.

Instrumentation

The study examined paraprofessional effectiveness and compared paraprofessionals' teaching styles and personality characteristics with program effectiveness. Data from the 1997 Adult Enrollment form, a component of the national EFNEP record keeping system, were utilized to measure program effectiveness. The Adult Enrollment form provides demographic and behavioral change data of participants as it relates to resource management, food safety and nutrition behaviors. These included: 1) planning meals in advance, 2) comparing prices, 3) running out of food before the end of the month, 4) not allowing meat or dairy foods to sit out for more than two hours, 5) not thawing foods at room temperature, 6) thinking of healthy food choices when deciding what to feed their families, 7) preparing foods without adding salt, 8) reading labels to select food with less sodium, and 9) reading labels to select food with less fat. Program effectiveness was defined in this study as statistically significant positive behavioral change in these nine areas as reported by program participants on the Adult Enrollment form.

The Principles of Adult Learning Scale (PALS) designed by Conti (1982) was used to assess paraprofessional teaching styles. This 44 item instrument is a summative rating scale using a modified Likert-type scale to identify an individuals' preferred teaching style, either teacher-centered or learner-centered. PALS has been tested by Conti for construct validity, criterion-related validity, and content validity (Conti, 1985b). He also has tested the PALS for reliability and internal consistency within the field of adult education (Conti, 1985b). Possible scores on the PALS range from zero to 220. The normed mean for the PALS is 146. High scores on the instrument are associated with learner-centered teaching behaviors. Lower PALS scores are associated with teacher-centered behaviors. A learner-centered teaching approach is described by Conti as being a collaborative process that assumes that adult learners are problem-centered and learn better when they deal with problems directly concerning them and the learning has immediate application to solving those problems. In the learner-centered mode, the teacher functions as a facilitator who supports the learners' self-directed learning efforts. The teacher-centered approach is an authoritarian approach to learning with the authority for what is to be learned and how it will be taught resides with the instructor (Conti, 1985a).

In a study of the relationship between teaching style and adult student learning in an adult basic education program, Conti (1985b) found that for short-term learning goals directed toward a specific goal (in this case, the GED), a teacher-centered approach appeared to be the more effective approach. However, for the development of skills that require a long-term process of learning that involves student self-concept, the more learner-centered approach appeared to be more effective. Each EFNEP paraprofessionals' score on the PALS was placed into one of three ordinal categories of low, medium and high for analysis purposes.

The Myers-Briggs Type Indicator (MBTI)was used to assess personality characteristics of paraprofessionals. The MBTI, based on Jung's theory of psychological types, reports preferences on four sub-scales. The four scales are Extraversion-Introversion Scale (EI), Sensing-Intuition Scale (SN), Thinking- Feeling Scale (TF), and Judgment-Perception Scale (JP). The EI scale describes whether an individual likes to focus his attention on the outer or inner world. The SN scale describes how an individual perceives or acquires information; does he use his senses of rely on intuition? The TF scale describes how the individual makes decisions or judgments about something either through thinking or feeling. The JP scale describes how an individual orients himself to the outer world by taking primarily a judging attitude or a perceptive attitude (Myers, 1962). Paraprofessionals' results from each sub-scale of the MBTI were analyzed as a two-level nominal variable for analysis.

Statistical analysis

Data collected in the project were analyzed using the Statistical Package for the Social Sciences (SPSS), Version 7.5 for Windows (SPSS,1997). Descriptive statistics were used to identify levels of impact of EFNEP programming. Crosstabulations, with appropriate measures of levels of associations, were used to determine levels of association between variables. Levels of statistical significance were determined at the .05 level.

Results

Results from this study indicate the paraprofessional approach has a positive impact on behavioral changes among participants related to nutrition choices, food safety practices, and food-related economic practices. For the nine expected behavior practices, the following percentages of participants reported some level of positive change during the 1997 program year: planning meals in advance (58%), comparing prices when shopping (44%), running out of food before the end of the month (36%), not allowing meat or dairy foods to sit out for more than two hours (47%), not thawing foods at room temperature (62%), thinking of healthy food choices when deciding what to feed their families (50%), preparing foods without added salt (47%), reading labels to select foods with less sodium (57%), and reading labels to select food with less fat (59%).

Looking at the effectiveness of EFNEP based on the paraprofessional's teaching styles and personality traits the results indicate that there are associations among these variables and the level of change in participants.

Teaching Style

The mean score for the 37 EFNEP paraprofessionals who completed the PALS was 89.7. This indicates that the paraprofessionals as a group are much more teacher-centered than the norm as found by Conti (1985a).

Examination of the paraprofessionals' PALS teaching style scores and the reported level of behavior changes by participants indicated statistically significant levels of association for six out of the nine behaviors. The three behaviors for which no statistically significant associations were found were: comparing prices when shopping, running out of food before the end of the month, and not thawing foods at room temperature. For each of the six behaviors that had a significant level of association with the PALS score, participants reporting greater degrees of positive change in food-related behaviors were working with paraprofessionals whose PALS scores were more teacher-centered, as opposed to the paraprofessionals whose scores were more toward the learner-centered end of the scale.

Personality Traits

Personality traits, as measured by the Myers-Briggs Type Indicator (MBTI) scale, also indicated several statistically significant associations with the levels of behavioral change reported by EFNEP participants. For the extraversion/introversion (E/I) preference area of MBTI, seven out of the nine reported behavioral changes produced a statistically significant measure of association between level of behavioral change and level of preference. The two behaviors that did not produce significant associations were: comparing prices when shopping, and running out of food before the end of the month. For the seven behaviors that were associated with the E/I area, the analysis indicates that participants working with a paraprofessional in the extraversion (E) range of the MBTI are more likely to report higher levels of positive behavioral change than those working with a paraprofessional in the introversion (I) range.

In the sensing/intuition (S/N) MBTI preference area, seven out of the nine behavioral items were associated with the personality trait level of the paraprofessional. The two behaviors that did not produce significant associations were: running out of food before the end of the month, and thinking of healthy food choices when deciding what to feed their families. For those behaviors that were associated with the S/N preference area, participants who worked with paraprofessionals scoring in the MBTI sensing (S) range were more likely to report higher levels of positive behavioral change than those working with a paraprofessional in the intuition (N) range.

The thinking/feeling (T/F) MBTI preference level was also associated with the level of reported positive behavioral change of participants in the same seven behavioral items as that found in the Extraversion/Introversion (E/I) range. The two behaviors that did not produce significant associations were: comparing prices when shopping, and running out of food before the end of the month. EFNEP participants who worked with paraprofessionals scoring in the MBTI thinking (T) preference range were more likely to report higher levels of positive behavioral change than those individuals working with paraprofessionals in the Feeling (F) range.

The judging attitude/perception attitude (J/P) MBTI level was associated with reported behavioral change in all nine of the reported behavioral change items. The analysis showed that those participants working with paraprofessionals whose MBTI scores fell in the judging (J) range were more likely to report higher levels of positive behavioral change than those participants working with a paraprofessional whose score was in the Perception (P) range.

Discussion

One of the findings of this study is that a relationship exists between the teaching style used in the education setting by the EFNEP paraprofessionals in this study and the level of participant behavior change. Although the adult education literature (Freire, 1970; Kidd, 1976; Knowles, 1970) suggests that the collaborative, learner-centered method of teaching is generally the most effective, this study indicates that teacher-centered approach more effectively elicits educational program impact. These results also appear to support Conti's findings in his study of an adult basic education program (Conti, 1985b). In that study, those individuals studying for the GED were more successful when taught by a more teacher-centered instructor. Perhaps the EFNEP curriculum objectives (i.e. specific behavioral changes) are somewhat like the goal of getting the GED in that they are very focused on specific, short-term goals. Another possible explanation is that EFNEP program participants are, generally, unfamiliar with adult learning situations and may require a more structured, organized learning environment in order to understand new concepts and develop skills necessary to change behavior.

This study also indicates that paraprofessionals whose MBTI personality traits fell in the ESTJ range more effectively achieved positive behavior change with their program participants. The individual with these personality traits tends to focus on the outer world of people and the external environment. This type of individual prefers to communicate by talking rather than writing, and needs to experience the world in order to understand it and thus tends to like variety and action. This "people-focus" corresponds with the literature which suggests that interpersonal skills are critical for successful paraprofessionals.

The paraprofessional with the sensing and thinking combination of preferences would tend to focus attention on realities and tends to handle this with objective analysis, thus becoming practical and analytical. The individual with this personality preference combination appears to be more successful. This conflicts with the literature which suggests that a successful paraprofessional should convey warmth, be empathetic, friendly, enthusiastic and understanding traits which describe the feeling and intuition preferences of the MBTI.

Recommendations

Based on the results of this study, the following recommendations are proposed:

1. Administrators of educational programs utilizing paraprofessionals to deliver educational programs directly to clientele should explore the use the measures of personality type and preferred teaching style in the paraprofessional recruitment, selection, orientation, and inservice training processes.

Hiring, training, and ongoing staff support decisions are critical for the provision of quality paraprofessional-delivered programs. Programs that cannot hire and retain quality staff will not be effective. Ineffective paraprofessional staff or high levels of staff turnover results in the inefficient use of valuable organizational resources. Program administrators could benefit from knowing the characteristics of effective paraprofessionals so they can make informed personnel and staff development decisions. Preferred teaching styles and personality preferences can be identified for current and potential paraprofessional employees using tools such as the Principles of Adult Learning Scale and the Myers-Briggs Type Indicator. This knowledge can help to identify positive aspects of potential employees in the selection process. Knowing this information about current paraprofessional employees can also provide insight to organizations as to what inservice training might be provided to help employees understand the concepts of teaching style and personality trait types and to use this information to plan and conduct more effective educational programs.

2. Studies need to be conducted beyond the scope of this study to provide additional information as to relationships between paraprofessional characteristics and program effectiveness. The results of this study support several earlier findings in the literature regarding teacher characteristics and educational program effectiveness. Additional studies involving paraprofessionals in other Extension or non-formal education organizations would contribute to the understanding of these relationships and their potential use. Such studies might identify other paraprofessional characteristics which can be used as indicators of an individual's potential effectiveness.

References

Brand, J. (1972). Agriculture aides: A new manpower resources? Family Planning Perspectives. 4(1): 48-53.

Cadwaller, A.A. (1985). A formative evaluation of a breast-feeding education program for low income women. M.S. thesis. Cornell University.

Cadwaller, A.A. & Olson, C.M. (1986). Use of a breast-feeding intervention by nutrition professionals. Journal of Nutrition Education. 18(3): 117-122.

Conti, G.J. (1982). The Principle of Adult Learning Scale. Adult Literacy and Basic Education. 135-147.

Conti, G.J. (1985a). Assessing teaching style in adult education: How and why. Lifelong-learning. 8(June): 7-11.

Conti, G.J. (1985b). The relationship between teaching style and adult student learning. Adult Education Quarterly. 35(4): 220-228.

Cormier, L., Cormier, W. & Weisser, R., Jr. (1984). Interviewing and helping skills for health professionals. Monterey, CA: Wadsworth.

Freire, P. (1970). The Pedagogy of the Oppressed. New York: The Seabury Press.

Giblin, P.T. (1989). Effective utilization and evaluation of indigenous health care works. Public Health Reports. 104(4): 361-368.

Iscan, W.E. & Nelson, H.Y. (1977). Follow-up of paraprofessionals working with low-income families. Home Economics Research Journal. 6 (2): 148-163.

Kidd, J.R. (1976). How Adults Learn. New York: Association Press.

Knowles, M.S. (1970). The Modern Practice of Adult Education. New York: Association Press.

Larner, M. & Halpern, R. (1987). Lay home visiting programs: Strengths, tensions, and challenges. Zero-to-Three. 8(1):1-7.

Myers, I.B. (1962). Manual: The Myers-Briggs Type Indicator. Palo Alto, CA: Consulting Psychologists Press, Inc.

Pearl, A., & Reissman R. (1965). New careers for the poor: The non-professional in human service. New York, NY: The Free Press.

Randall, M., Brink, M.S. & Joy, A.B. (1989). EFNEP: An investment in America's future. Journal of Nutrition Education. 21(6): 221-279.

Santopolo, F.A., & Kell, K. (1976). Paraprofessionals: Critical job requirements. Journal of Extension. July/August: 8-10.

Spindler, E.B. (1967). Program Aides for work with low income families. Part I. Use of a home economics program aide. Journal of the American Dietetic Association. 50:478.

SPSS Inc. (1997). SPSS Base 7.5 for Windows Users Guide. Chicago, IL.

Wasik, B.K. (1993). Staffing issues for home visiting programs. The Future of Children. 3(3): 140-157.

Wasik, B.H. (1997). Professional or paraprofessional home visitors? It depends. Family Futures.1(5): 16-18.

Yerka, B.L. (1974). Effectiveness of paraprofessionals in working with low-income families: An experimental study. Ph.D. Dissertation. Syracuse University.

Abstract

To create and maintain a high-quality paraprofessional program, administrators would benefit from knowing characteristics of successful paraprofessionals. This study examined the educational effectiveness of paraprofessionals and compared paraprofessional teaching style and personality type with their program effectiveness. Results indicate that there are associations among these variables and the level of positive behavioral change in participants. Participants working with paraprofessionals whose Myers-Briggs type indicator scores fell in the E (Extraversion), S (Sensing), T (Thinking), and J (Judging) ranges and participants working with paraprofessionals scoring in the teacher-centered range of the Principles of Adult Learning Scale were more likely to report higher levels of positive behavior change. Information from this study can guide and direct personnel and training decisions and enhance programs of organizations that utilize the paraprofessional model for education delivery.

A COMPARISON OF FARM SYSTEMS ON DIFFERENT TOPOGRAPHIES IN TRINIDAD

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ABSTRACT

The majority of farmers in the Caribbean operate on small parcels (< 5 ac.) of land, and are loosely categorised as "small farmers". Most Caribbean countries are also mountainous, and it is estimated that 50 - 70 % of the total farming community operate on lands that are either sloping or hilly. The farming community is assumed to be homogeneous in nature and differences in external circumstances are rarely recognized. As a result, policies and programmes developed for small farmers are usually quite broad and have a built in flat-land bias. This study examined the contrasts and commonalities that exist among small farm systems in Trinidad. One hundred and eighty crop-based commercially oriented farmers were selected in a two stage sampling procedure, and surveyed. Stepwise multiple discriminant analysis was used to distinguish the groups. The results showed that farm systems were undifferentiated on the basis of their net cash income derived from farming and their access to resources for production. However, farmers on hilly lands appear to have higher technical abilities, perceived technology better and had a greater scientific orientation than flat-land farmers. The study pointed to the need for more policy and programme support for farm systems on hillsides to develop existing potential.

INTRODUCTION

In the Caribbean, small farmers produce the bulk of food and cash crops. These farmers constitute between 50-75% of the total number of farmers in the region (Rajack,1990). The majority of these farmers operate lands of 0-5 acres in size. In addition, most Caribbean islands are mountainous and the percentage of farms on hillsides can range from 50-75% of the total farming community. Data (NADP,1992) show that total available arable land in Trinidad is merely 26% of total land area. Further, the state is the largest single owner of arable land, and together with large landowners control 70% of the available arable land. These lands are usually flat, or gently sloping, and fertile. The multitude of small farmers, estimated at around 40,000, consequently farm on the remainder of the fertile, flat lands, but mostly on marginal lands, often on hillsides. These small farmers depend on farming as a means of livelihood to support their families. In Trinidad, it is estimated that about 50% of these farm systems are on lands that are either hilly or undulating in topography.

In situations where farm systems are on marginal lands, have limited and irregular access to resources, are vulnerable to the vagaries of weather, and necessary information, daily decision making for growth and development of the farm is difficult, and often choices made by farm operators will impact on the overall well being of the farm family. Carefully planned and conducted extension education programmes should be an important aspect of their development.

The main concern of this study however, is that policies and programmes developed for small farmers in the region are normally quite broad and consequently limiting. Differences in external circumstances, in particular topographical variations, and other differences in the character of the farmers and their farms are not given much attention. Indeed, it appears that educational programmes have a built in flat-fertile land bias, further marginalizing the great numbers of farmers on sloping and hilly areas. The assumption is that these farms are unproductive, and in situations of scarce public extension resources, they are usually given little attention.

Miracle (1968) noted that data available suggest differences in decision making situations faced by small farmers, and it may be possible to distinguish situations which may be easier to change than others. He further argued that these differences stem from their farmers' experiences, their abilities and farm circumstances. In addition, data from a series of Rapid Reconnaissance Surveys done in Trinidad (Dolly and Young, 1991) indicate that farms differ in many respects such as soil type and fertility, accessibility, terrain, water availability, access to markets, goals, aspirations etc.. Moreover, while many variations exist among farm systems, goelogical constraints continue to be a major obstacle to progress and development in most Caribbean countries. Differences based on topography, a diverse circumstance in Caribbean small farm systems, merit attention. The shear magnitude of farms in Caribbean that are either on hillsides or undulating terrain when compared to flat lands demands that they should be targeted as a special category for policy and programme intervention.

PROBLEM

National planners rarely seem to consider differences in the circumstances of small farmers , continuing to provide broad policies and objectives for development. Educational programmes are often standardised and simplified by central planning agencies, and there is a notable absence of programmes targeted to farmers on terrains other than flat and fertile . The full development potential of the vast number of farm systems on hilly and undulating topography cannot be properly attained in these situations. However, any effort to address this situation must start with information, beyond simple demographic data. Some basic questions remain unanswered. Is it more advantageous to farm on flat lands? Casual observations across the country are confusing since one can observe some "very successful" hillside farm systems. Also, if these systems are indeed different, what are the characteristics associated with farming on hillsides, compared to farming on flatter regions? Is it really justifiable to ignore farms on hillsides based on historically held opinions about the nature and productivity of these farm systems? What are the strengths of each system that could enhance the other, and the weaknesses that need improvement? No enquiry has been done to identify these characteristics, and as such detailed profiles of these systems could be of immense value to planners and extensionists. These areas need to be examined as we prepare to improve farmers' well being.

PURPOSE

This paper examined and described the contrasts and commonalities that exist among small farm systems. Specifically, it sought to :

1) investigate if farm systems can be differentiated on the basis of topography.
2) identify the characteristics that differentiate these systems; and
3) develop profiles of differentiated systems.

METHOD

Sample Selection

One hundred and eighty crop-based, commercially-oriented farmers were selected by a two stage procedure. In the first stage, nine areas were chosen by simple random sampling from seventy five "pockets" of crop growing areas in Trinidad. Twenty farms were then randomly selected from each area and surveyed. Data were collected by Extension agents on the variables investigated using a structured interview schedule. This was done over a 2-month period. The data was subjected to stepwise Discriminant analysis to statistically distinguish the groups (klecka,1984) and to identify the characteristics that interact to differentiate the groups.

Variables

Differences due to topography were examined from the set of characteristics which included:

Net cash income:
Human capital: age, experience, health, education, training,
Farm related: labour and land use intensities, crop spacings practised, no. of crops grown, risk bearing ability of farm, technology use.
Psychological: goals, aspirations, attitudes, satisfaction levels, technology perception, perceived social status
Resource base: capital and labour bases, land size, no. of land parcels, abilities (managerial, technical entrepreneurial).
Decision: record keeping, style, extension and influence.

RESULTS

The data (Table 1) show that farm systems on different topographies can be differentiated on the basis of the following eighteen variables:

Net cash income.
Farm related: intensity of land use, land tenure status, the risk bearing ability of the farm, and number of crops grown.
Resource base: number of parcels of land owned, managerial ability, technical ability, and entrepreneurial ability.

Psychological: attitude towards risk, businesslike attitude, Commitment to agriculture, scientific orientation, "adventurism" attitude, satisfaction with standard of living, and technology perception.
Decision making: style, and extension officers' influence.

The group centroids are expressed in Table 1. The hypothesis that "in the population from which the sample was drawn, there is no difference between the group means (centroids) on the discriminant scores" is rejected based on Wilks Lambda (.518) and associated statistics (Chi square = 111; df = 18; p<.001). The discriminant function derived was fairly successful in distinguishing between the two groups as indicated by the high Eigenvalue (.929), fairly high canonical correlation (.649) , and moderate Wilks Lambda (.518) associated with the function.

Group profiles:

The standardized discriminant function coefficients (Table 1) revealed the relative importance of the characteristics in the function. It showed that the land use intensity, managerial ability, technical ability, satisfaction with standard of living, attitude to risk, businesslike approach, and the risk bearing ability of the farm were the more important variables differentiating the systems.

The signs of the group centroids assist in identifying the group with which function coefficients are associated. Farmers operating on flat land possessed higher managerial abilities, were less satisfied with their standard of living, reported a lower ability of farm to bounce back into operation after some crisis, but a greater businesslike approach to farming. To a lesser extent they were more influenced by extension officers, had higher entrepreneurial abilities, more secure tenure of land, and a greater commitment to agriculture.

The data also showed that farmers operating on hilly or undulating topography utilised their land at higher intensities, farmed on more parcels of land, had higher technical abilities and were more positive in their attitude to risk than other farmers. To a lesser extent they perceived technology better, and had a higher scientific orientation.

The variables useful in differentiating the two systems accounted for 42% of the variance between the groups (Table 1).

TABLE 1: STEPWISE DISCRIMINANT ANALYSIS OF FARM SYSTEMS BY TOPOGRAPHICAL VARIATION

VARIABLES	STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS	WILKS LAMBDA
Land use intensity	-.702	.795
Satisfaction/standard of living	.498	.753
Managerial ability	.611	.698
Technical ability	-.519	.657

No. of parcels of land	-.256	.540
Attitude to risk	-.437	.528
Businesslike attitude	.315	.725
Risk bearing ability of farm	.349	.520
Extension officers' influence	.294	.626
Technology perception	-.259	.534
Entrepreneurial ability	.261	.560
Land tenure status	.251	.570
Att:- Commitment to agriculture	.231	.513
Scientific orientation	-.226	.608
Decision making style	.107	.508
Att:-Adventurism	.184	.590
Net cash income	.174	.580
No. of crops grown	.140	.550

GROUP CENTROIDS : 1. Flat (.738) 2. Hilly (-1.244)
FUNCTION STATISTICS:
Eigenvalue .929
Canonical Correlation .649
Wilks Lambda .518
Chi Sq. 111 df. 18 prob. .001
% Variance 42.2%

Discussion:

The characteristics that differentiate the two systems also contradict a lot of expectations. Farmers on hilly lands appear to have higher technical abilities, perceived technology better, and to have greater scientific orientation. This is unexpected and may be because farmers in one known high producing area, Bonne Aventure, were classed among hillside farmers. One may construe this as distorting the data, and a deviation, but there are other areas in the country that are similar in nature e.g. Paramin.

The data also show that net cash incomes and access to resources do not play important roles in differentiating these farmers. The data also suggest that regardless of topography, farming systems can perform well, and access to resources is not a limiting factor for farmers on hillsides alone.

There is a tendency to concentrate development efforts to farmers on flat lands on the assumption that there is greater potential for development in these systems over systems on hilly terrain. Since most of the Caribbean small farmers operate on hilly or undulating topography, the majority of these farmers are not the primary beneficiaries of education efforts, infrastructural developments, etc. This may be a misinformed approach, to the detriment of hillside systems which appear to have the potential to perform as well as other systems. If the vast array of farm systems on hilly/undulating topography are brought more into the mainstream of development efforts, then increased production could be achieved, and the lifestyle of a vast number of farmers could be improved.

Also long years of farming under harsh topographical conditions may have encouraged positive adaptations, to the extent that more similarities than differences exist in these systems. This is especially so in the most important area of farm performance.

The large number of farmers eking out a living on hillsides may be purely subsistence type. This study did not target this system.

CONCLUSION AND IMPORTANCE

The main conclusions are that (1) systems on hillsides can perform as well as systems on flat lands and (2) the farm related and resource base characteristics are more important in differentiating these systems.

The tendency to concentrate development efforts toward farmers on flat land mainly is challenged. Farmers on the hills appeared to have adapted to the harsh ecological conditions and are capable of performing well. The majority of Caribbean small farmers on hillsides deserve more policy, educational and infrastructural support. Also, the important role they play in agricultural development must be recognized and developed as we enter the 21st Century.

REFERENCES

Dolly,D and G Young. 1991 eds. Rapid Reconnaissance Surveys. Nos 1-8. Ministry of Agriculture Land and Marine Resources/University of the West Indies, St. Augustine, Trinidad.

Klecka, William, R. 1984. Discriminant analysis. Beverly Hills, CA. Sage Press.

Miracle, Marvin, P. 1968. "Subsistence Agriculture" Analytical Problems and alternative concepts. American Journal of Agricultural Economics. 50 (2). 293-310.

Rajack, T,A. 1990 In collaboration with D.A Campbell and D Hutton. The Organisation and Management of Agricultural Services for Small Farmers in Grenada, Jamaica and Trinidad and Tobago (OMASA). FAO/UWI

Trinidad and Tobago, Ministry of Agriculture Land and Marine Resources 1992. National Agriculture Development Plan. MALMR, Port of spain, Trinidad.

The Potential of Participatory Rural Appraisal (PRA) Approaches and Methods for Agricultural Extension and Development in the 21st Century

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Abstract. Agricultural extension approaches and methods in developing countries have been changing in recent years to reflect a new development paradigm that emphasizes sustainability, institutional change, and a participatory learning process. The purpose of this paper is to reconsider and reflect upon how agricultural extension approaches and methods have adapted to these changes in recent years by asking the questions: 1) What are the main directions of reform in agricultural extension approaches and methods for a new development paradigm? and 2) How much potential do participatory approaches and methods have for moving the extension profession from a teaching to a learning paradigm? In addition, this paper will analyze the role Participatory Rural Appraisal (PRA), described as "a growing family of approaches and methods to enable local people to share, enhance and analyze their knowledge of life and conditions, to plan and to act (Chambers, 1994a, p. 953)", has played in the last decade and the potential it has for agricultural extension.

Rethinking Extension: Where are we now?

Now that the field of agricultural extension and development is wrapping up a century of practice, it is an opportune time to reflect upon past approaches and practices and explore new ones in the context of an emerging development paradigm that emphasizes participatory learning processes and sustainable development. Particularly in the context of sustainable agricultural, agriculture extension plays a crucial role (Roling & Pretty, 1997). The traditional roles of transferring and disseminating agricultural technologies and good farm practices are no longer sufficient (Swanson, Bentz, & Sofranko, 1997).

The traditional extension role is one where agricultural professionals have the task of identifying and adapting technology that is appropriate to the needs and situations of individual farmers within diverse agro-ecological and socioeconomic contexts (Landon Lane & Powell, 1996). In the 1950's and 1960's, it was assumed that the farmer was not knowledgeable and programs were established based on change agents who aimed to achieve widespread adoption of recommended technology packages (Landon Lane & Powell, 1996; Chambers, 1993). In the 1970's and 1980's, it was assumed that new hybrids and genotypes could be introduced across agricultural, environmental and socioeconomic diversity in an attempt to remove farm-level constraints (Landon Lane & Powell, 1996). By the mid-1980's, Farming Systems Research and Extension (FSR/E), developed in the late 1970's, had contributed to understanding the complexity of many farming systems, that farm-level constraints did limit adoption, and the important role of the farmer within the system (Hildebrand, 1986; Landon Lane & Powell, 1996; Cornwall, 1993). Agricultural extension approaches and methods in developing countries have been changing even more in recent years to reflect a development paradigm emerging in the 1990's that emphasizes a participatory learning process, sustainability, and institutional development (den Biggler, 1991; Elliot & Martin, 1995; Picciotto, 1995).

Although models of FSR/E and Farmer Participatory Research, developed in the 1980's, were arguing that research should be determined by explicitly identified farmers needs and not that of researchers, extension methodology has long been grounded in the diffusion model of agricultural development, in which technologies are passed from research scientist via extensionists to farmers (Roling & Pretty, 1997; Cornwall, 1993; Rogers, 1983). This approach is exemplified by the training and visit (T&V) system, in which extension agents are regularly trained in order to improve their technical skills which they then hope to pass on to all farmers through selected contact farmers. Contact farmers, whose progressiveness often sets them apart from the rest of the community, are usually selected on the basis of literacy, wealth and readiness for change. Subsequently, the transfer from contact farmers to the rest of the community has been much less successful than predicted or hoped (Roling & Pretty, 1997). Based on past extension experiences, it is now even clearer that extension will need to involve farmers themselves in the process of research and development and furthermore, that the participation of farmers should be highly interactive, empowering and that significant learning should take place among all actors; researchers, extensionists and farmers (Roling & Pretty, 1997).

Roling and Pretty (1997) identify three major lessons to be learned for extension. The first is to demonstrate the feasibility of sustainable practices through increased visibility of practices and giving farming the necessary tools for monitoring their own farm situation. The second is to use farmers' knowledge for location-specific sustainable agriculture. The third lesson is to facilitate learning instead of "transferring" technology (Roling & Pretty, 1997). In the 1990's, development programs worldwide have recognized that participation by local people is the key to the sustainable transfer and long-term adoption of new technologies and approaches precisely because interactive participation is the approach that facilitates this kind of learning environment (Landon Lane & Powell, 1996; Chambers, 1993; Pretty & Chambers, 1993; Pretty & Vodouhe, 1997; Adhikarya, 1994; Ameur, 1994).

The purpose of this paper is to reconsider and reflect upon how agricultural extension approaches and methods have adapted to these changes in recent years by asking two questions: 1) What are the main directions of reform in agricultural extension approaches and methods to meet the challenge of a new development paradigm? and 2) How much potential do participatory approaches and methods, such as Participatory Rural Appraisal (PRA), have for moving the extension profession from a teaching to a learning paradigm?

An Emerging Learning Paradigm for Agricultural Extension

The "sustainability" question is greatly affected by extension because environmental issues emerge directly from human use of natural resources. A necessary condition for sustainable resource use is that large numbers of farming households must be motivated to coordinate resource management. In most places, collective decision making has not been well established. The success of sustainable agriculture therefore depends on action taken by communities as a whole, as well as the motivation, skills and knowledge of individuals (Roling & Pretty, 1997). This makes the extensionists' task more challenging. An agricultural extension approach that incorporates sustainability as a central principle requires new ways of learning about the world.

Teaching has always been the normal mode of educational programs and institutional structures, where the transfer of knowledge is from one whom knows to someone who presumably does not. Universities and agricultural training institutions reinforce this teaching paradigm by giving the impression that they are the custodians of knowledge and students and/or farmers the recipients of that knowledge. This kind of teaching can actually threaten sustainable agriculture (Roling & Pretty, 1997). Sustainable agriculture requires farmers to observe, anticipate and intervene in a constantly changing natural system. Technology and extension for sustainable agriculture systems must therefore emphasize helping individual farmers assess their own situations and promote local cooperation and coordination of common resources. The social transition towards new learning processes becomes critical for extension institutions (Roling & Pretty, 1997). Thus, the challenge for agricultural institutions is to move from a teaching paradigm towards a learning paradigm, which assumes that interaction between all actors is highly participatory and knowledge sharing.

The Importance of Interactive Participation

Especially in the last decade, both development and extension programs have been subject to scrutiny, in part because the last ten years has witnessed a significant change in rhetoric but little change in the practice of rural development. The changes reflect an emerging paradigm that include a reversal from top-down to bottom-up, from centralized standardization to local diversity and from blueprint learning to process learning. These involve a move away from extractive survey questionnaires and toward new methods for participatory appraisal and analysis in which more of the activities are carried out by local rural people themselves, and the learning process is shared actively and directly within and between insider and outsiders (Chambers, 1994a). Subsequently, agricultural extensionists need to adapt their approach and methods to reflect a paradigm that values diversity, flexibility, emphasizes process learning and sustainability over quantitative output and is, above all, participatory (Picciotto, 1995).

An increasing number of project analyses have shown that participation by local people is one of the critical components of success in agriculture sectors, irrigation, livestock and water projects (Pretty & Vodouhe, 1997; Reij, 1988; Cernea & International Bank for Reconstruction and Development., 1991; Uphoff, ; Pretty et al., 1995; World Bank, 1994; Narayan, 1993). One major study of 121 rural water supply projects in 49 countries of Africa, Asia and Latin America found that participation was the significant factor contributing to project effectiveness (Narayan, 1993). As a result, the term "participation" has now become part of the normal language of many development agencies, but the level of participation varies greatly (Reij, 1988; Bunch, 1991; Kerr, 1994). Pretty (1997) has created seven categories describing participation, from least to most participatory:

1. Passive participation where locals are told what is going to happen and are involved primarily through being informed of the process.
2. Information Giving where locals answer questions to pre-formulated questionnaires or research questions and does not influence the formulation or interpretation of the questions.
3. Consultation where locals are consulted by external agents who define both problems and solutions in light of the responses, but are under no obligation to take on people's views or share in decision making.
4. Material Incentive where locals provide resources, such as labor or land, in return for other material incentives. They do not have a stake in continuing activities once the incentives end.
5. Functional participation where locals form groups usually initiated by and dependent on external facilitators to participate in project implementation. These groups may become self-dependant and are usually formed after major decisions have been made, rather than during the early stages of a project.
6. Interactive participation where locals participate in joint analysis which leads to action plans and the formation of new local institutions or strengthening existing ones. The groups take control over local decisions and people have a stake in maintaining structures or practices.
7. Self-Mobilization where locals participate by taking initiative independent of external institutions and develop contacts with external institutions for resources and technical advice, but retain control over how resources are used. Source: (Pretty & Vodouhe, 1997; Pretty, 1994) adapted from (Adnan et al., 1992).

This typology demonstrates the importance of clearly defining the degree of participation in a project. The best results occur when people are involved in decision making during all stages of the project. It is therefore important to ensure that those using the term define ways of shifting participation from passive toward interactive participation. The critical way of doing this is to utilize interactive and participatory methods, such as Participatory Rural Appraisal (PRA) (Pretty & Vodouhe, 1997). Most participatory methods share certain assumptions (Roling & Pretty, 1997). They assume cumulative learning by all participants and seek diversity in multiple perspectives, assuming that different individuals and groups make different evaluations of situations. They assume a learning process best revealed through group inquiry and sharing and flexibility adaptable to site-specific socioeconomic and ecological conditions. The role of the professional in participatory methodologies is best thought of a facilitator helping people to carry out their own study. The interaction between professionals and diverse groups of local people creates a learning process that leads to increased consensus on directions for change, thus making the change more sustainable. In short, the sustainability and process learning paradigm that agricultural extension is moving towards cannot be implemented successfully without all actors being involved in a continuing process of participatory learning (Roling & Pretty, 1997; Pretty & Vodouhe, 1997).

Using Participatory/Rapid Rural Appraisal for a Learning Paradigm

Among emerging participatory methods, an important part has been played by two closely related families of approaches and methods, referred to as Rapid Rural Appraisal (RRA) and Participatory

Rural Appraisal (PRA). RRA was developed and spread in the 1980's, and its further evolution in the early 1990's developed into PRA. Participatory Rural Appraisal is described as "a growing family of approaches and methods to enable local people to share, enhance and analyze their knowledge of life and conditions, to plan and to act (Chambers, 1994a, p.953)". PRA is one approach that is addressing the need for reform in extension by providing the tools to agricultural professionals necessary for working within a learning paradigm of extension. It is therefore important to analyze the role PRA has played in the last decade and the potential it has for agricultural extension and development in the future.

As a concept, the participation of local people has had a long history in rural development and agricultural extension, but not until the early 1990' have numerous innovations incorporated participatory techniques into project design, implementation, monitoring, evaluation of extension and education programs. PRA traces its origins primarily to the following five fields (Chambers, 1994a): 1) activist participatory research; 2) agro-ecosystem analysis; 3) applied anthropology; 4) field research on farming systems; and 5) rapid rural appraisal. Each of these fields contributed aspects of what today is considered the family of Participatory Learning. Of these, the most recent and direct source of PRA is Rapid Rural Appraisal (RRA), a philosophy, approach and set of methods that began to emerge in the 1970's as an attempt to find better ways to learn about rural life and conditions in different countries (Chambers, 1994a).

Rapid and Participatory Rural Appraisals originated due to three historical trends (Chambers, 1994a). First was a general dissatisfaction with the biases of "rural development" tourism, the so-called phenomenon of the brief rural visit by outsider development professionals. Problems with brief field visits are numerous, primarily because they contain biases of four main types: 1) Spatial bias towards better-off people who live near roadways; 2) Time/seasonal biases towards seasons when roads are open and people are busy in the field; 3) People biases towards rural leaders and dominant groups; and 4) project biases towards showcase communities or technologies that may be the exception rather than the rule (Pretty & Vodouhe, 1997). These biases combine to hide the poorer, worst conditions in communities (Chambers, 1994a).

The second trend was disillusionment with conventional methodologies that have, in the past, relied heavily on questionnaire surveys and their results, to gather information. One problem with such questionnaires is that the questions must be formed in advance and those who design them do not know which issues are important to local people nor can they ensure that all relevant issues are covered. Experience has shown over many years that large-scale surveys with long questionnaires tend to be drawn-out, tedious, difficult to process and write up, and most importantly, obtain inaccurate and unreliable data (Chambers, 1994a). The result of quick rural visits and a heavy reliance on traditional questionnaires is a falsely favorable impressions of the impact of project work, which gives institutions and agricultural professionals less reason for initiating or encouraging change. In response, rural development practitioners began to seek alternatives that avoid these problems (Pretty & Vodouhe, 1997; Chambers, 1994a).

The third, more positive trend resulting in Rapid Rural Appraisal, was the search for more cost effective methods of learning about rural life, which was helped by a growing recognition that rural people themselves are knowledgeable on the conditions that affect their lives. In the 1980's RRA gained increasing acceptance and was argued to be cost-effective, gain timely information and elicit a range and quality of information and insights inaccessible through traditional methods. More than any other influence, agroecosystem analysis in Southeast Asia introduced new methods and established credibility, as the University of Khon Kaen in Thailand became the world leader in developing theory and methods and institutionalizing RRA as a part of professional training in the mid-1980's (Chambers, 1994a). Much of the spread of PRA has taken place laterally South-South, through the sharing of field experiences and training by international and local organizations, most of them non-governmental (Chambers, 1994a). Only recently has the spread become South-North as northern based Universities and institutions are increasingly recognizing the potential of PRA.

Effective Participatory/Rapid Rural Appraisal requires that practitioners follow basic principles. Chambers (1994b) describes the principles shared by both RRA and PRA: 1) a reversal of learning where professionals learn from local people's physical, technical and social knowledge, directly, on site, and face to face; 2) learning rapidly and progressively, with conscious exploration, flexible use of methods, improvisation, cross-checking and being adaptable in the learning process rather than following a set blueprint; 3) offsetting biases by being relaxed, not rushing, listening and not lecturing, probing topics rather than moving to the next, being unimposing instead of important and seeking out the poorer people and learning diverse concerns and priorities; 4) optimizing tradeoffs, relating the costs of learning to the usefulness of the information and making tradeoffs between the quantity, relevance, accuracy and timeliness. This includes the principal of optimal ignorance – knowing what is not worth knowing and not trying to find it out, and of appropriate imprecision – not measuring what is not needed or more accurately than what is needed because it is better to be approximately right than precisely wrong; 5) Triangulating, meaning the process of cross-checking and progressive learning and approximation through plural investigation, which involves assessing and comparing findings from several, at least three methods, sets of condition, points in a range or distribution, individuals or groups of analysis, places, times, disciplines, investigators and/or a combination of these; 6) Seeking diversity, meaning looking for and learning from the exception or "seeking variability rather than averages (Beebe, 1987, p. 53-54)" or "maximizing the diversity and richness of information (Dunn & McMillan, 1991, p. 5,8)". Of these principles, PRA puts special emphasis on offsetting biases and adds four more 1) They do it where facilitating investigation, analysis, presentation and learning by local people themselves tot hat they generate and own outcomes. It requires confidence by professionals the "they can do it" and often the outside facilitator initiates a process of participatory analysis then sits back and let locals do it. 2) Self-critical awareness, meaning that outside facilitators continuously and critically examine their own behavior and includes embracing error as an opportunity to learn, facing failure positively and correcting dominant behavior; 3) Personal responsibility, PRA practitioners take personal responsibility for what is done rather than rely on rules or manuals and take responsibility to "Use your own best judgement at all times, (Peters, 1989) p. 378; 4) Sharing of information and ideas between local people themselves, between locals and outside facilitators, between different practitioners (encouraging photo-copying and non attribution) sharing experiences between different organizations, regions and countries. The principles shared by RRA and PRA are primarily epistemological, having to do with obtaining information and gaining knowledge, while those specific to PRA are mainly personal, having to do with outsider's behaviors and attitudes. This is because PRA puts an emphasis on how outsiders interact with local people (Chambers, 1994b).

The more developed and tested Participatory Rural Appraisal methods include participatory mapping and modeling, showing who lives where and the location of important local resources such as water, forests, schools and other services; transect walks; institutional diagramming; analytical and flow diagrams to indicate linkages, sequences, causes, effects, problems and solutions; seasonal calendars showing how food availability, workloads, family health, prices, wages and other factors vary during the year; trend and change analysis; and matrix scoring, scored with seeds, pebbles or other counters, to compare things, such as the merits of different crop varieties or tree species, or how conditions have changed over time (Chambers, 1994a). PRA methods have been applied in the field of agriculture and natural resource management since the late 1980's. The methods are now largely shared between RRA and PRA, but outsiders usually play a larger role in RRA than in PRA. The primary distinction between RRA and PRA is that RRA's are intended for learning by outsiders and the basic purpose is to gather information from local people's knowledge. In contrast, PRA is intended to enable local people to conduct their own analysis, to plan and to take action and the basic purpose is empowerment of local people by facilitating their analytical, planning and evaluation abilities. PRA is a process that takes place over time, usually beginning as RRA and developing along on a continuum into a process led primarily by local people. True PRA implies significant personal and institutional change and more often than not, particular as labeling projects as participatory has become fashionable, institutions will tend to claim PRA approaches when their approach remains largely unchanged and top-down.

Rapid Rural Appraisal approaches and methods have been used for appraisal, analysis and research in many subject areas over the last twenty years, including agroecosystems, natural resources, irrigation, technology and innovation, health and nutrition, farming systems research and extension, pastoralism, marketing, disaster relief, and organizational assessment. PRA has evolved and spread so recently and quickly that inventorying cases will be incomplete. Despite that, PRA has begun to be utilized in many countries. Following are a list of cases using PRA in agricultural related topics that have been documented thus far (Chambers, 1994b; Chambers, 1994c; Chambers, 1994a):

1) Farmer participatory research/farming systems research and problem identification and analysis by farmers (Ampt & Ison, 1988; Ampt, 1989) in (Chambers, 1994a; Kar & Datta, 1991) in (Chambers, 1994a; Dunn & McMillan, 1991) in (Chambers, 1994a; FSRU, 1991) in (Chambers, 1994a; PRA team, 1991) in (Chambers, 1994a; Guijt et al., 1992; Lightfoot et al., 1992) in (Chambers, 1994a; Landon Lane & Powell, 1996; Chambers, 1993); (Drinkwater, ; Lightfoot & Noble, 1993)
2) Livestock and animal husbandry (Leyland, 1993; Maranga, 1993) (Sonaiya, 1993; Watson & Cullis,)1994 in (Chambers, 1994a)
3) Markets; investigation markets and smallholder marketing potentials (Holtzman, 1993) in (Chambers, 1994a)
4) Watersheds; participatory watershed planning and management (Neefjes, 1993; Kerr, 1991; Devavaram et al., 1991; Shah, 1993)
5) Village Plans and preparing Village Resource Management Plans (PID & NES, 1991; Shah, 1991; Shah et al., 1991)

However, the application and institutionalization of PRA in agricultural extension programs in programs is still largely nonexistent. The only extension agencies documented that have officially adopted a PRA approach are the Soil and Water Conservation Branch of the Ministry of Agriculture in Kenya, the District Rural Development Agencies, Andhra Pradesh, India, and the Forest Departments of several Indian states (Chambers, 1994a). The United States has been particularly slow to adopt or train development or agriculture extension professionals in PRA approaches. There are no documented extension agencies utilizing PRA and less than a handful of Universities that offer courses in PRA.

There are also few documented evaluations of the impact of PRA as an extension method in the agricultural development process. PRA is recent and many processes are still in their early stages, experienced trainers have been mostly engaged in training and appraisal rather than monitoring and evaluation, and in the first years of PRA, academic researchers were slow to recognize the potential and spread of PRA. However, the scale of adoption and reports of practical use and evaluation indicate great potential. The number of countries in which PRA is strongly established is rising (presently at least 40 countries) and many universities and training institutions' staff around the world are now using it (Chambers, 1994a; Chambers, 1994b). After reviewing the cases using PRA approaches and methods and reflecting upon why it has taken until the 1990's for the approach and methods to reach its present range and versatility, it is evident that there are many actual and potential applications for agricultural extension and development. The most systematic evaluation and analysis of the impact of PRA, compared with alternatives, has been a participatory study conducted in Kenya in April-May 1993, in which six areas of a Soil and Water Conservation Program were studied. The study showed that performance indicators had been worst where the approach had not been participatory and were generally higher where catchment committees were freely elected and the highest where farmers had participated in planning and layout due to an interdepartmental beginning with PRA (Pretty & Thompson, 1993) in (Chambers, 1994a). However, there is clearly a need to further research, apply and evaluate PRA in the field of extension in order to understand its full impact and potential.

Conclusion

A review of literature and agricultural related case studies using Participatory Rural Appraisal methods and approaches for development and extension processes indicate that PRA is an innovative, rich, flexible, effective, valid, participatory, and quickly spreading set of approaches and methods. University, governmental and non-governmental staff working in agricultural extension and development should begin integrating these tools, particularly as they strive to meet the challenge of a new development paradigm that emphasizes sustainability and new learning processes similar to those of PRA.

References

Adhikarya, R. (1994). Strategic Extension Campaign: A Participatory-oriented Method of Agricultural Extension. Rome, Italy: FAO.

Adnan, S., Barrett, A., Nurul Alam, S. M., & Brustinow, A. (1992). Dhaka, Bangladesh: Research and Advisory Services.

Ameur, C. (1994). Agricultural Extension: A Step Beyond the Next Step, World Bank Technical Paper No. 247. Washington DC: World Bank.

Ampt, P. (1989). Rapid rural appraisal for the identification of grassland research problems. Proceedings of the XVI International Grassland Congress, Nice, France, 1291-1292.

Ampt, P., & Ison, R. (1988). Sydney, Australia: University of Sydney, School of Crop Sciences.

Beebe, J. (1987). Rapid appraisal: The evolution of the concept and the definition of the issues. Proceedings of the 1985 International Conference on Rapid Rural Appraisal, Systems Research and Farming Systems Research Projects: Khon Kaen University (pp. pp. 47-68). Khon Kaen, Thailand: University of Khon Kaen.

Bunch, R. (1991). People-centred agricultural improvement. In: B. Haverkort, van der Kamp, & A. Waters-Bayer (editors), Joining Farmers' Experiments: Experiences in Participatory Development. London: IT Publications.

Cernea, M. M., & International Bank for Reconstruction and Development. (1991). Putting People First: Sociological Variables in Rural Development. 2nd edition. New York: World Bank and Oxford University Press.

Chambers, R. (1993). Methods for analysis by farmers: the professional challenge. Journal for Farming Systems Research Extension, 4(1), 87-101; 6 tab.; 36 ref.

Chambers, R. (1994a). The origins and practice of Participatory Rural Appraisal. World-Development Oxford . (22 July '94), 953-69.

Chambers, R. (1994b). Participatory Rural Appraisal (PRA): Analysis of experience. World Development Oxford, 22(9), 1253-1268; 72 ref.

Chambers, R. (1994c). Participatory Rural Appraisal (PRA): Challenges, potentials and paradigm. World Development Oxford, 22(10), 1437-1454; 4 pp. of ref.

Chambers, R. (1993). Challenging the Professions: Frontiers for rural development. London: Intermediate Technology Publications.

Cornwall, A. (1993). Acknowledging Process: Challenges for Agricultural Research and Extension Methodology. Sussex, England: Institute of Development Studies.

den Biggler, C. (1991). Farming systems development: Synthesizing indigenous and scientific knowledge systems. Agriculture and Human Values, 8(1.2), 25-37.

Devavaram, J., Vimalnathan, N. J., Sarkar, A., Krishnan, Mayandi, A. P., & Karunanidhi. (1991). PRA for rural resource management. RRA Notes, 13, 102-111.

Drinkwater, M. (1993) Sorting fact from opinion: the use of a direct matrix to evaluate finger millet varieties. RRA-Notes -International-Institute-for-Environment-and-Development (17), 24-28.

Dunn, T., & McMillan, A. (1991). Action research: the application of rapid rural appraisal to learn about issues of concern in landcare areas near Wagga, Wagga, NSW. Conference on Agriculture, Education and Information Transfer New South Wales: Murrumbigee College of Agriculture.

Elliot, A. V., & Martin, R. A. (1995). The development of a framework for the evaluation of the capacity-building components in rural development projects. Journal of International Agricultural and Extension Education, (Spring), 36-47.

FSRU. (1991). Structural Adjustment and Communal Area Agriculture in Zimbabwe: Case Studies from Mangwende and Chivi Communal Areas: A Report of a Rapid Rural Appraisal Exercise. Harare, Zimbabwe: Farming Systems Research Unit, Department of Research and Specialist Services, Ministry of Lands, Agriculture and Rural Settlement.

Guijt, I., Pretty, J. N., & International Institute for Environment and Development. Sustainable Agriculture Programme. (1992). Participatory Rural Appraisal for Farmer Participatory Research in Punjab, Pakistan: Report of a training workshop, Pakistan-Swiss Potato Development Project, Gujranwala, Punjab Province, Pakistan. London : Sustainable Agriculture Programme, International Institute for Environment and Development.

Hildebrand, P. E. (1986). Perspectives on Farming Systems Research and Extension. Boulder, Colorado: Lynne Rienner Publishers.

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Holtzman, J. S. (1993). Rapid appraisal methods in a diagnostic assessment of vegetable seed marketing. Rapid-Appraisal-Methods. 1993, 112-135; 1 Fig., 2 Tab.; 9 Ref, 112-135.

Kar, K., & Datta, S. N. (1991). Seva Bharati, India:

Kerr, J. (1994). How subsidies distort incentives and undermine watershed development projects in India. The Social, Economic, and Environmental Impacts of Participatory Watershed Development London: IIED.

Kerr, J. M. (1991). Farmers' practices and soil and water conservation programmes. Summary Proceedings of a Workshop, June 19-21 1991, ICRISAT Center Patancheru, India: ICRISAT Center.

Landon Lane, C., & Powell, A. P. (1996). Participatory rural appraisal concepts applied to agricultural extension: a case study in Sumatra. Proceedings of the IXth World Congress of the International Association of Agricultural Information Specialists: Communicating Agricultural Information in Remote Places, January 23-26, 1995, Melbourne, Australia. Part I. Quarterly-Bulletin-of-IAALD, 41(1), 100-103.

Leyland, T. (1993). Participatory rural appraisal in Afghanistan. In: P. W. Daniels (editor), Livestock Services for Small holders . Bogor, Indonesia: Indonesian International Animal Science Research and Development Foundation.

Lightfoot, C., Dalgaard, P., Bimbao, M., & Fermin, F. (1992). Farmer participatory procedures for managing and monitoring sustainable farming systems. Second Asian Farming Systems Symposium, BMICH Cololombo, Sri Lanka: BMICH.

Lightfoot, C., & Noble, R. (1993). A participatory experiment in sustainable agriculture. Journal for Farming Systems Research/Extension, 4(1), 11-34.

Maranga, S. (1993). Participatory information collection in Kenya and Zimbabwe. In: P. W. Daniels (editor), Livestock Services for Small holders . Bogor, Indonesia: Indonesian International Animal Science Research and Development Foundation.

Narayan, D. (1993). Focus on participation: Evidence from 121 rural water supply projects. Washington DC: World Bank.

Neefjes, K. (1993). Examples of participatory rural appraisal (PRA) in wetland development in Guinea Bissau. RRA Notes, 17, 49-56.

Peters, T. (1989). Thriving on Chaos: Handbook for a Management Revolution. London: Pan Books.

Picciotto, R. (1995). Introduction: Evaluation and development. New Directions for Evaluation, 67(Fall 1995), 13-23.

PID, & NES. (1991). An Introduction to Participatory Rural Appraisal for Rural Resources Management. Nairobi: Program for International Development, Clark University and National Environment Secretariat, Ministry of Environment and Natural Resources.

PRA team. (1991). The Kyeamba Valley: Issues of concern to landholders and their families, identified in a Participatory Rural Appraisal by members of the Kyeamba Valley community, September 1991.

Pretty, J. N. (1994). Alternative systems of inquiry for sustainable agriculture. IDS Bulletin, 25(2), 37-48.

Pretty, J. N., Guijt, I., Scoones, I., & Thompson, J. (1995). A Trainers' Guide to Participatory Learning and Action: IIED Training Materials Series No. 1. London: IIED.

Pretty, J. N., & Chambers, R. (1993). Towards a Learning Paradigm: New Professionalism and Institutions for Agriculture: Discussion Paper No. 334. Sussex, England: Institute of Development Studies (IDS).

Pretty, J. N., & Vodouhe, S. D. (1997). Using Rapid or Participatory Rural Appraisal. In Swanson et al. (editors), Improving Agricultural Extension: A reference manual (pp. 47-55). Rome: FAO.

Pretty, J., & Thompson, J. (1993). London: IIED.

Reij, C. (1988). The agroforestry project in Burkino Faso: An analysis of popular participation in soil and water conservation. In: C. Conroy, & M. Litvinoff (editors), The Greening of Aid (pp. 74-77). London: Earthscan Publications.

Rogers, E. M. (1983). Diffusion of Innovations, Third Edition. New York: Free Press.

Roling, N., & Pretty, J. N. (1997). Extension's role in sustainable agriculture development. In: B. E. Swanson, R. P. Bentz, & A. J. Sofranko (editors), Improving Agricultural Extension: A reference manual (pp. 181-191). Rome: FAO.

Shah, P. (1993). Participatory watershed management programmes in India: Reversing our roles and revising our theories. Rural People[illegible] Knowledge, Agricultural Research and Extension

Session P Extension Program Evaluation

March 23, 3:30 - 5:30 p. m.

Session Chair - Wade Miller

Location: Maraval Room

TITLE: Monitoring Extension: A Cognition Oriented Approach Towards Evaluation
AUTHOR: Gustav Duvel
South African Institute for Agricultural Extension, University of Pretoria, 002 , Pretoria, South Africa
DISCUSSANT: R. David Mustian

TITLE: An Evaluation of the Family Support Program in Akwa Ibom State, Nigeria
AUTHOR: Bridget O. Udoh
Louisiana State University
DISCUSSANT: R. David Mustian

TITLE: Outreach Profiling at ISU
AUTHOR: Lynn Jones
Iowa State University
DISCUSSANT: Jimmy Lindner

TITLE: The Conduct of Undergraduate Teaching of Agricultural Extension at the University of the West Indies Trinidad and Tobago
AUTHOR: David Dolly
University of the West Indies
DISCUSSANT: Jimmy Lindner

MONITORING EXTENSION : A COGNITION ORIENTED APPROACH TOWARDS EVALUATION

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1. INTRODUCTION

It is generally accepted that proper evaluation is one of the key factors in enhancing the effectiveness and efficiency of extension. This, in fact, is one of the major purposes of evaluation, namely to improve present and future extension. However, the classical summative evaluation conducted after completion of a program cannot improve the present extension, but only future programs. This meets the needs and interests of managers and directors, but for the operators concerned about improving their present performance, this has little more than only a historic value.

If more is expected from an evaluation than learning whether and to what extent the intended results have been achieved, then evaluation will have to be more differentiated. It will have to provide answers as to why certain results were achieved, or why not. What is needed is a monitoring instrument, that allows the monitoring of change as it occurs and not only an evaluation at the end of the process or the program. This will allow the extensionist to know before the end of the program, whether he is still on track and whether or what adaptations have to be made regarding approaches, methods, messages, etc.

This emphasizes the need to understand change and how it is brought about, which essentially relates to the determinants of change and understanding which of these causal factors are accessible for extension, how communication can be planned and carried out meaningfully, and how these determinants can be used to monitor and evaluate change.

Against the background of behavior theories, this paper identifies relevant factors or behavior determinants that can be used to represent the focus of extension activities and extension objectives and can, consequently, be used for monitoring purposes. It shows how these determinants can be measured and gives an example of an evaluation and monitoring document.

2. IDENTIFYING MONITORING AND EVALUATION PARAMETERS

If evaluation and monitoring is focused on change, the change related factors and their interdependency could give an indication as to what the focus of objectives aimed at change should be. The problems encountered in agricultural development are usually efficiency related; the ultimate usually being, as indicated in Fig.1, economic efficiency (or inefficiency) which is usually the function of some form of physical inefficiency. Both are the results of behavior, which, in a holistic context, can be described as management and entails the various practices that have to be adopted correctly and timely. This behavior is caused by or is the function of behavior determinants, which can again be subdivided into independent and intervening variables, the latter being the immediate precursors of behavior through which the independent variables become manifested in behavior.

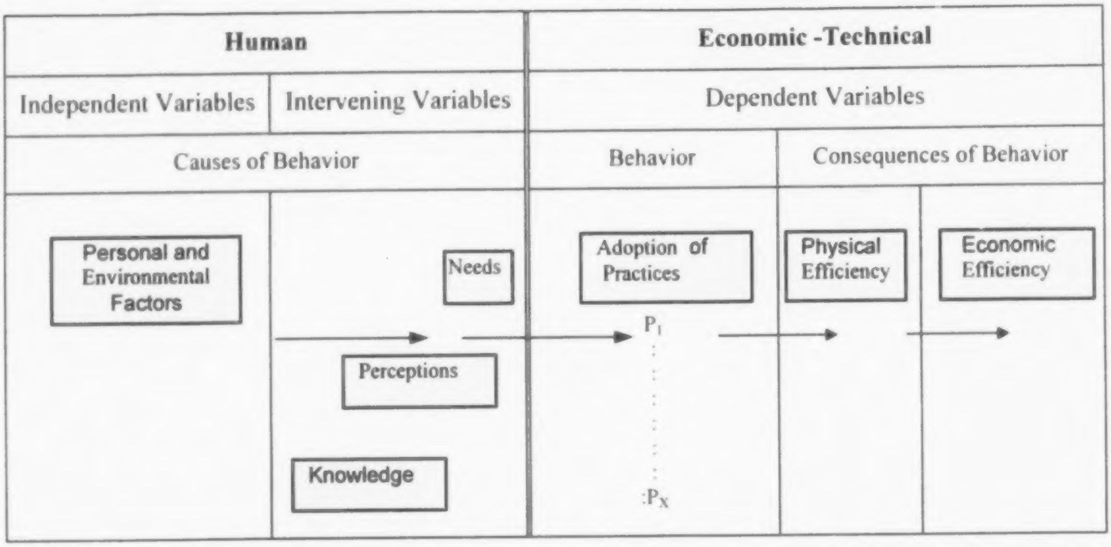

Figure 1: **The relationship between behavior-determining and behavior-dependent variables in agricultural development**

From the above influence relationship it can be concluded that monitoring of a variable, as evaluation criterion is possible by evaluating the preceding or causal variable. For example, whether changes are occurring in terms of the economic or physical efficiency can be deduced from monitoring changes in adoption behavior. An exact prediction is not possible, but it gives an indication as to whether there is progress and whether the extensionist is "on the right track".

Similarly the adoption behavior could be monitored by an evaluation of the intervening variables, which directly influence the adoption behavior. These intervening or mediating variables can be associated with what Lewin (1951) refers to as the "forces" of change within the “life space” or “cognitive field”. If a change of these forces, be it through strengthening of the driving (positive) forces or through the removal or reduction of restraining (negative) forces, leads to change in behavior, they are obviously the most suitable and appropriate criteria or measures of change. For example, if the recommendation was for farmers to plant their crop earlier, this required change in behavior could be brought about by changes in their cognitive field, of which needs, perceptions and/or knowledge are the main components. These are largely psychological constructs and, consequently the changes are of a covert nature. On the other hand, the overt changes (e.g. the planting time) would also be visible and measurable only after the next planting season. Whether the change agent is succeeding and making progress in this regard, can be concluded from an evaluation of the change in "forces" or change in the intervening variables.

The principle evolving from the above is that a form of monitoring is possible by focusing on the preceding or causal variables as evaluation criteria. The results of behavior (e.g. profitability, or production efficiency) can be monitored through the adoption behavior, which in turn can be monitored through evaluating the changes in the cognitive field (needs, perceptions and knowledge).

These latter variables are, as far as the extensionist's interest in evaluation is concerned, the most important and critical criteria. The more specific advantages of using the intervening variables as criteria of change are the following:

- They are, as direct determinants of behavior, the logical focus of intervention, and consequently also the logical criteria of evaluation.
- They will, if monitored, reveal why (or why not) change has occurred. Similarly, it is through these variables that progress (or the lack of it) can be monitored and that the extensionist can get

an indication concerning the adaptations that need to be made in terms of message, method or approach.

- They allow for a fair and just merit assessment or recognition of performance. It is not uncommon for an extensionist to either get undue credit for change that can only be partially accredited to him, or -- perhaps even more frequently -- not to get credit for what he has accomplished, simply because the change is of a covert nature. To illustrate this important consideration in extension management, two overtly similar situations in terms of the adoption of a practice (e.g. earlier planting) are shown in Fig.2. Although the wards A and B, served by two different extensionists, may appear similar in the sense that no recommended adoption may have occurred, they may differ considerably as far as the covert cognitive or psychological forces are concerned.

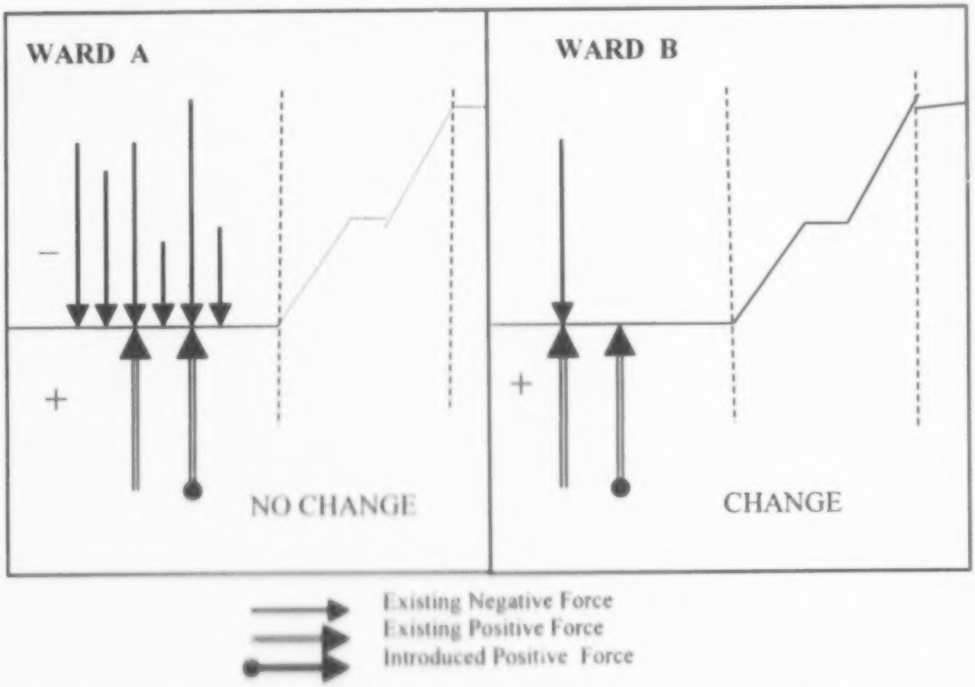

Figure 2: **The potential influence of similar interventions (introduction of a positive or driving force) in two situations which are overtly similar but differ in terms of the prevailing covert cognitive field**

In the example shown in Fig. 2, the forces (shown here as the average or typical cognitive field) in Ward B are almost in equilibrium, while the constellation of forces in Ward A is characterized by a very strong imbalance of negative over positive forces. It stands to reason that if both extensionists were equally successful in introducing a significant positive force of the same magnitude, visible large-scale change (expressed as movement) would only take place in Ward B, whilst the extensionist in Ward A, having been as successful, would have nothing visible to show.

3. MONITORING CRITERIA

As already mentioned the appropriate variables for monitoring change are the intervening variables, and more specifically the cognitive variables associated with needs, perceptions and knowledge. These have been selected and tested in extensive research projects over a number of years (De Klerk & Düvel, 1982, Düvel, 1975; Düvel, 1995, Düvel & Afful, 1994, Düvel & Botha, 1990; Düvel & Scholtz, 1986, Louw & Düvel, 1978, Marincowitz & Düvel, 1987) and are incorporated in the following behavior analysis model in a cause-effect relationship (see Figure 3):

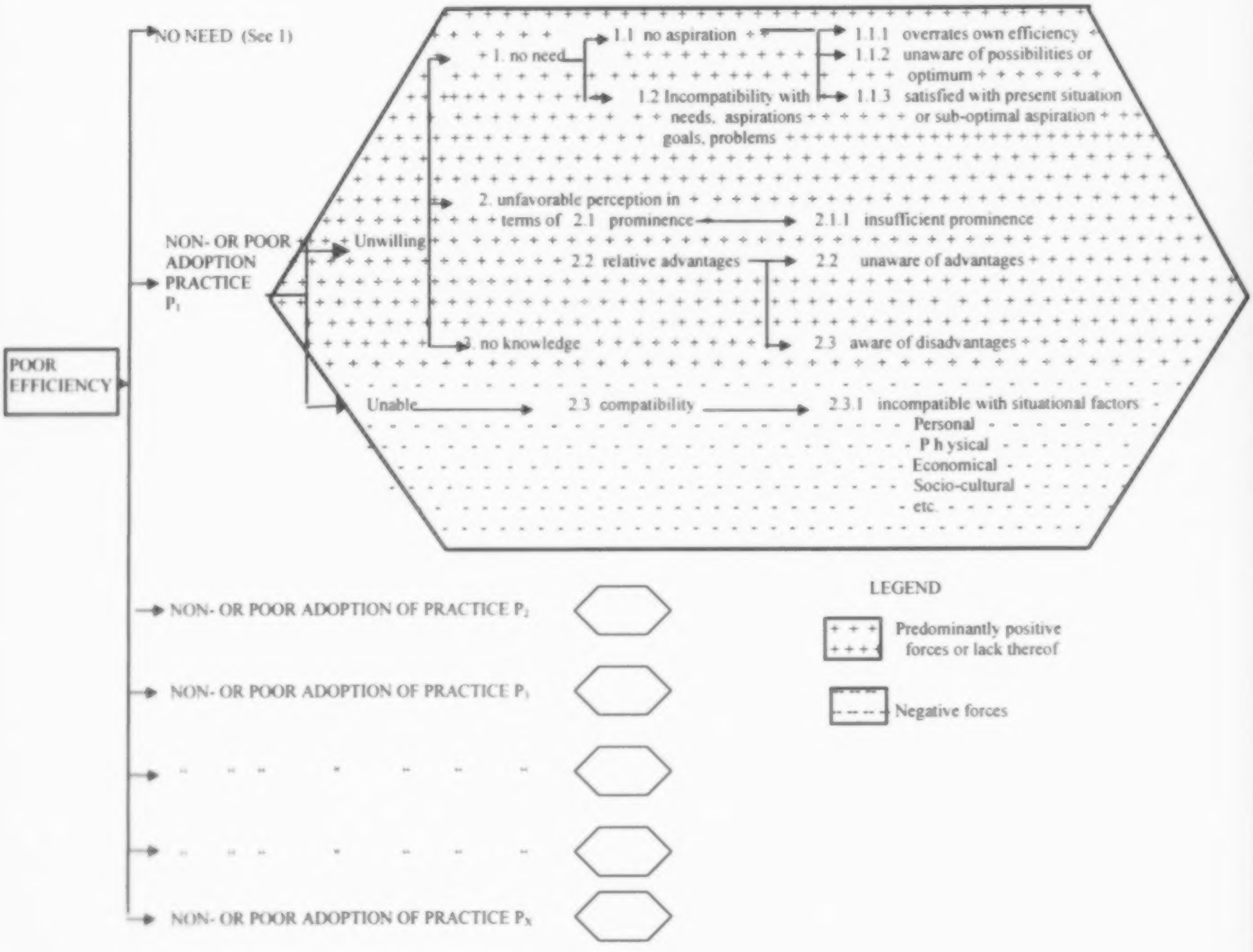
NO NEED (See 1)
POOR EFFICIENCY
NON- OR POOR ADOPTION PRACTICE P_1
Unwilling
Unable
1. no need
1.1 no aspiration
1.2 Incompatibility with needs, aspirations goals, problems
1.1.1 overrates own efficiency
1.1.2 unaware of possibilities or optimum
1.1.3 satisfied with present situation or sub-optimal aspiration
2. unfavorable perception in terms of 2.1 prominence
2.1.1 insufficient prominence
2.2 relative advantages
2.2 unaware of advantages
2.3 aware of disadvantages
3. no knowledge
2.3 compatibility
2.3.1 incompatible with situational factors
Personal
Physical
Economical
Socio-cultural
etc.
NON- OR POOR ADOPTION OF PRACTICE P_2
NON- OR POOR ADOPTION OF PRACTICE P_3
NON- OR POOR ADOPTION OF PRACTICE P_X
LEGEND
Predominantly positive forces or lack thereof
Negative forces

Figure 3: **Model for behavior analysis and intervention**

3.1 Needs (1, Fig. 3)

The concept of needs is used in a broad context and includes concepts like drives, motives, incentives, goals and even problems, mainly because the vocabulary of the psychology of motivation has as yet not been firmly established, resulting in these different concepts being used synonymously or being interchanged (Düvel, 1991). There appears to exist a "field polarity" consisting of a need (usually some

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form of deprivation resulting in disequilibrium or system in tension) located within the individual, and a goal object situated in the environment. The goal-object will assume a positive character (positive incentive) if it is perceived by the individual as having a potential need-satisfying capacity, and a negative valence in the case of a threatening further deprivation (negative incentive).

The need-related causes that have been found to determine the non-adoption of recommended practices are lacking aspirations (see 1.1 in Figure 3) and need incompatibility (see 1.2 in Figure 3). The lacking aspiration relates more specifically to a tendency on the part of the farmer to overrate his own efficiency, e.g. his grazing condition or production efficiency (1.1.1 in Figure 3), to an unawareness of the possibilities or the optimum (1.1.2), and to a satisfaction with the present situation or having a sub-optimal aspiration (1.1.3).

In a sense these aspects all have to do with the problem perception where a problem is regarded as being the difference between "what is" (present situation) and "what can be" or is strived at, viz. the desired situation (Düvel, 1997:59). If the existing situation, e.g. the efficiency of production or rangeland condition, is overrated due to "misperception" (see 1.1.1 in Figure 3), the perceived scope of the problem or potential need tension is reduced. If, at the same time, there is limited knowledge concerning the optimum that is achievable (1.1.2), the potential problem and need can be further reduced to an insignificant level.

Perhaps even more critical is the need compatibility (see 1.2 in Figure 3). This essentially means that an innovation or recommended practice does not fit the life space or need situation of the individual in the sense that it is not perceived as either a need related goal, or as a means of achieving such a goal.

3.2 **Perceptions** (2, Fig. 3)

Although perceptions and needs (especially aspirations and goals) are related and interwoven, the necessity to identify all direct behavior determinants as specifically as possible, justifies a separate focus on perception. Where needs usually relate to all positive or driving forces which in total constitute the attractiveness, perceptions are of a more specific nature and are analyzed on the basis of attributes of innovations. Rogers' (1983) classification of innovation attributes does not suit this purpose, mainly because of the broad and unspecific categories. In order to make provision for a wider spectrum of specific forces (for the purpose of cause identification as well as for addressing these causes in the attempt to promote change), these attributes have been redefined (Düvel, 1987). The categories that can be directly associated with field forces are relative advantages, compatibility aspects and prominence and consequently give direct access to the possible identification of relevant positive and negative forces.

An unfavorable perception as cause of unwillingness to adopt can thus have the following causes:

(a) Insufficient prominence (2.1 Fig. 3), i.e. the recommended practice is seen as less prominent or less advantageous than the current one or than another alternative. This perception aspect corresponds with Rogers' (1983) definition of "relative advantage"

(b) Unawareness of the advantages of the recommended solution (2.2 Fig. 3)

(c) Awareness of disadvantages of the recommended solution (2.3 Fig. 3)

(d) Situational incompatibility, viz. an awareness of constraints preventing the implementation of the solution or recommended practice (2.4 Fig. 3)

3.2 **Knowledge** (3, Fig. 3)

Knowledge that is relevant in the case of innovation or practice adoption can be categorized as follows:

(i) Basic knowledge or knowledge of principles

(ii) Knowledge associated with the awareness of relative advantages and knowledge of the recommended solutions

(iii) Knowledge in respect of the application of an innovation or practice

The first two types of knowledge, in particular, are related to each other, but from a motivation point of view it is really only the knowledge concerning the recommended solution and its relative advantages (ii), that is of importance. This type of knowledge or cognition can be regarded as an intrinsic part of perception and thus largely overlaps with it. It is for this reason that an analysis of perception also caters for most relevant aspects of knowledge.

The knowledge of principles is important because it provides insight and therefore invariably has a bearing on the intensity with which the relative advantages are perceived as field forces. Basic knowledge is also fundamental if the farmer is to become independent or self-sufficient in terms of decision-making and self-help. Practical knowledge is one of the last pre-requisites for implementation or, in terms of Lewin's (1951) model, one of the last areas through which it is necessary to move before goal achievement.

This aspect is thus largely provided for under compatibility (2.4) and thereby supports the conclusion that, through an analysis of perception, most relevant aspects of knowledge can be identified.

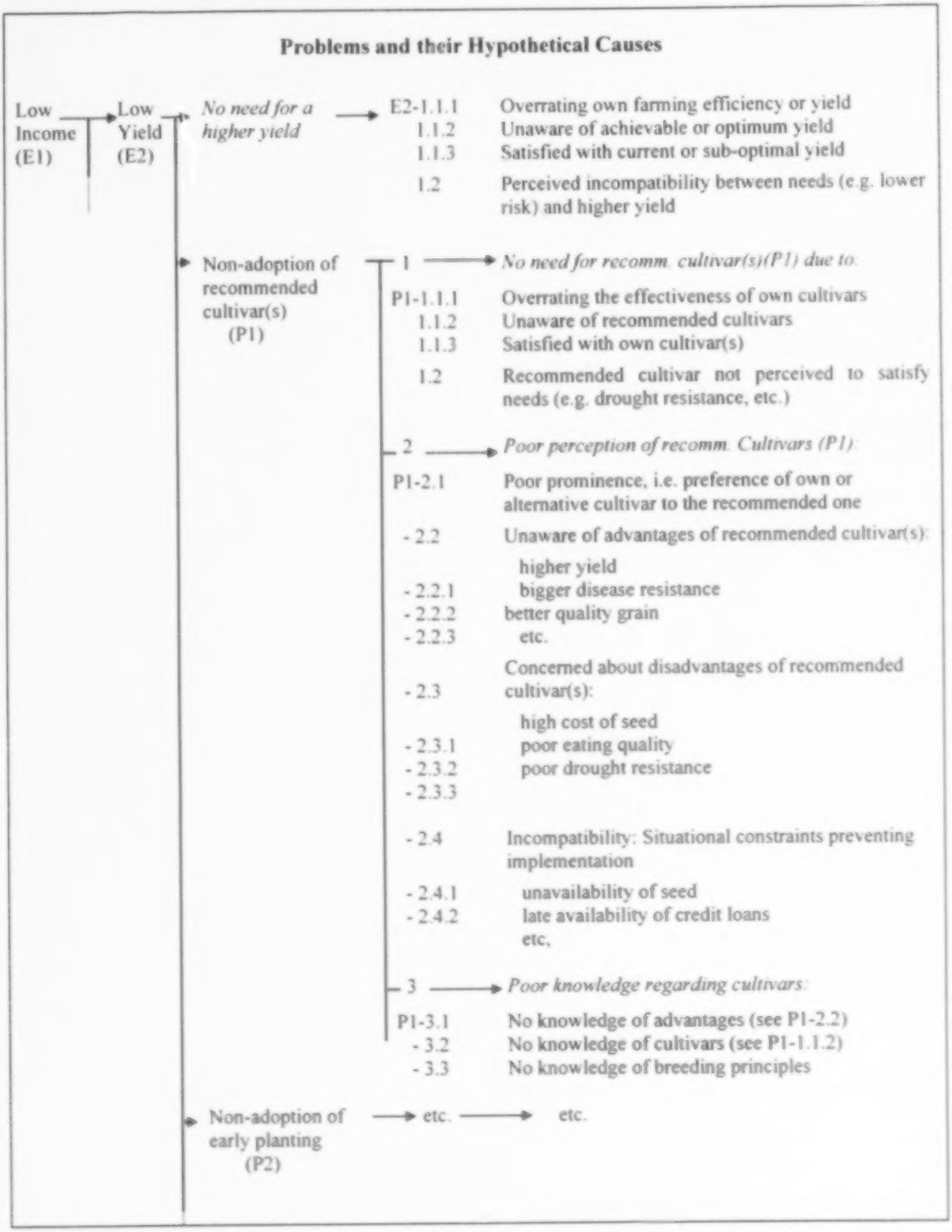
4. TOWARDS THE FORMULATION OF OBJECTIVES

Meaningful evaluations are only possible with clearly defined objectives. They are the statements indicating where we want to go (in terms of situational change), in a specific time, from where we are now. They represent the "destinations" of the program journey, and permit us to read the "dashboard signals" that assure that we will arrive at our destination. The "destinations" are usually set in terms of efficiency parameters but should also be in respect of the causes of behavior or cognitive field forces (see Fig. 2). The latter represent more particularly the "dashboard signals".

The identification of the relevant objectives can be done by means of a problem conceptualization along the guidelines given by the model framework in Fig. 3. This is illustrated in Fig.4 by means of a maize production example.

Being a hypothetical construct, the problem conceptualization exercise has to be followed up with a survey to establish whether and to what degree the assumed or hypothesized problems or their causes are in fact problems. In this way the conceptualization framework dictates what information needs to be gathered during the benchmark survey. The survey results provide the basis for the formulation of objectives. This process, especially the selection, priority determination and the setting of standards or ceilings to be attained should be, like the problem conceptualization and the preceding problem delineation, a participative exercise involving the community or community representatives. Other important principles when formulating the objectives is that they be explicit (in terms of the kind of change, the extent -- minimum level --of change, the area or target community and the time dimension) specific and comprehensive (so that every action or activity can be directly linked to formulated objectives) and integrated (showing a clear link-up between the various levels of objectives, i.e. from general -- mission and primary objectives -- to the specific objectives and activities

The following example, based on the conceptualization information in Fig. 4, is a document of objectives trying to meet most of the mentioned criteria or preconditions (Fig. 5). The above objectives are those of the program committee and as such only partially coincide with the work objectives of the extensionist. They do not meet the requirements for internal management, administration and control. For this reason, as well as for proper internal budgeting, a separate set of



Problems and their Hypothetical Causes

Low Income (E1) → Low Yield (E2) → *No need for a higher yield* →

E2-1.1.1 Overrating own farming efficiency or yield
1.1.2 Unaware of achievable or optimum yield
1.1.3 Satisfied with current or sub-optimal yield
1.2 Perceived incompatibility between needs (e.g. lower risk) and higher yield

→ Non-adoption of recommended cultivar(s) (P1)

1 → *No need for recomm. cultivar(s)(P1) due to:*

P1-1.1.1 Overrating the effectiveness of own cultivars
1.1.2 Unaware of recommended cultivars
1.1.3 Satisfied with own cultivar(s)
1.2 Recommended cultivar not perceived to satisfy needs (e.g. drought resistance, etc.)

2 → *Poor perception of recomm. Cultivars (P1):*

P1-2.1 Poor prominence, i.e. preference of own or alternative cultivar to the recommended one
- 2.2 Unaware of advantages of recommended cultivar(s):
  - 2.2.1 higher yield
  - 2.2.2 bigger disease resistance
  - 2.2.3 better quality grain
  etc.
- 2.3 Concerned about disadvantages of recommended cultivar(s):
  - 2.3.1 high cost of seed
  - 2.3.2 poor eating quality
  - 2.3.3 poor drought resistance
- 2.4 Incompatibility: Situational constraints preventing implementation
  - 2.4.1 unavailability of seed
  - 2.4.2 late availability of credit loans
  etc,

3 → *Poor knowledge regarding cultivars:*

P1-3.1 No knowledge of advantages (see P1-2.2)
- 3.2 No knowledge of cultivars (see P1-1.1.2)
- 3.3 No knowledge of breeding principles

→ Non-adoption of early planting (P2) → etc. → etc.

Fig. 4 Hypothetical problems and causes in maize production: an example of problem conceptualization

In view of (the mission) enabling communities towards improved life quality and higher standard of living through more profitable agricultural production, the objectives are:

PRIMARY OBJECTIVE	SECONDARY OBJECTIVES	SPECIFIC OBJECTIVES
1 To increase the average maize yield in the Middlerest District from 2 to 3.5 tons over a period of 2 yrs	1.1 To increase the number of farmers having a need for increasing their maize yield from 21 to 90 by 1 Sept. 1988	1.1.1 To decrease the number of farmers overrating their production efficiency from 76 to 20 by July 1998
		1.1.2 To increase the number of farmers having knowledge of the maize potentials on the Middlerest soils from 8 to 60 by July 1998
		1.1.3 To increase the number of farmers being convinced that a higher yield will lead to lower risk (or higher profitability) from 25 to 75 by 1 September, 1998
	1.2 To increase the number of farmers growing the recommended cultivar(s)	1.2.1 To decrease the number of farmers overrating the effectiveness of their cultivars from 65 to 32 by July 15, 1998
		1.2.2 To increase the number of farmers having knowledge of the recommended cultivars from 41 to 85 by July 15, 1998
		1.2.3 To increase the number of farmers that are convinced that the recommended cultivars can contribute towards a higher yield, more drought resistance from 37 to 85 by July 15, 1998
		1.2.4 To increase the number of farmers preferring the recommended cultivars to their own or other cultivars from 20 to 75 by July 15, 1998
		1.2.5 To increase the number of farmers being aware of the following advantages of the recommended cultivars from 25 to 65 by August 20, 1998: • higher yield • better grain quality • higher disease resistance • more drought resistance
		1.2.6 To decrease the number of farmers being concerned about the following disadvantages of recommended cultivars from 72 to 30 by August 20, 1998.
		1.2.7 To remove the constraint of seed shortage perceived by 20 percent of the farmers before October 1, 1998.
	1.3 To increase the percentage maize planted before 15 November from 20 to 70 %	1.3.1 To reduce the number of farmers overestimating their planting time efficiency from 55 to 20 by November 10, 1998 etc.
		1.3.2 etc.
		1.3.3

Figure 5. **An example of integrated primary, secondary and specific objectives**

working objectives needs to be drawn up by the extensionist. His working objectives are primarily input related and not, like the program objectives, focused on output.

An example of such objectives is given in Fig. 6, The format also allows for an easy and comprehensive calculation of the estimated costs or budget for the program.

Objectives/Activities	Inputs/Costs	Standards
1. To establish a program committee for the purpose of participation and ownership of the program.		
1.1 Decide or reflect on the nature (subject content) of the PDC*		
1.2 Analyze the institutional structures and decide on the appropriate nature and degree of representation on the PDC		
1.3 Discuss the establishment of the envisaged PDC with the tribal chief or hierarchy		
1.4 Collect views and canvass support for the necessity, function, composition , election/nomination procedure in discussion with various community representatives or leaders, viz. Farmer A Farmer B Farmer C Farmer D		
1.5 Arrange village meetings for election/nomination of PDC members.		
1.6 Prepare an introductory talk on the necessities and the functions of the PDC.		
1.7 Hold/attend the village meeting(s)		
1.8 Give publicity to the election results and convene the first PDC meeting.		
1.9 Prepare the first meeting with special reference to responsibilities, functions, office bearers, working procedure - constitution - and training program of the PDC.		
1.10 Hold the first meeting to have decisions taken regarding the above (1.9)		
1.11 Give publicity to the PDC regarding its objectives, functions, etc.		
1.12 Identify the next meeting (or regular meetings) for purposes of "problem conceptualization".		
2. To conduct a problem conceptualization with the PDC		
2.1 To prepare a draft problem conceptualization to serve as guiding framework for the PDC conceptualization exercise.		
2.2 To conduct a technical problem conceptualization with the PDC ⇒ List problems from PDC and survey ⇒ Conduct a "result conceptualization of all problems ⇒ Agree on general problem (and goal) formulation ⇒ Conduct problem conceptualization according to causes. ⇒ Identify "efficiency aspects" and "practices" ⇒ Reconcile them with the survey.		
3. To analyze the survey results		
4. To compile a report based on the survey results		
5. To formulate (with committee) the primary and secondary program objectives		
5.1 Present findings to PDC		
5.2 Identify focus of objectives		
5.3 Decide on standards and aims		
5.4 Formulate objectives (primary and secondary)		
6. etc.		

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* Program Development Committee

Figure 6. An example of work objectives and activities

In the initial planning phase these objectives or activities are bound to be still rather vague and general in nature. However, at the beginning of every month an adapted and detailed plan or set of objectives (including those relating to non-programmed activities) should be drawn up and submitted to management together with the month's work calendar. The work calendar is essentially only a variation of the above activities or work objectives, and should have their respective reference numbers for purposes of clarity and transparency.

5. THE EVALUATION DOCUMENT

The increasing importance of evaluation and accountability justifies a clear indication to managers, sponsors and clients as to how and when the evaluation is to be done. For this purpose an evaluation document should be drawn up, summarizing the selected objectives (primary, secondary and specific), the evaluation dates and the methods of evaluation. Fig. 7 is an example of such a document.

OBJECTIVES		EVALUATION DATE	EVALUATION METHOD*
1.	**To increase the average maize yield in Middlerest from 2 to 3.5 tons over a period of 2 years**	July 1998 July 1999	Consult Statistics
1.1	To increase the number of farmers having a need for increasing their maize yield from 21 to 90 by 1 Sept. 1988	1 Sept. 1998	Sample survey
1.1.1	To decrease the number of farmers overrating their production efficiency from 76 to 20 by July 1998	27 June, 1998	Sample survey Question No 23
1.1.2	To increase the number of farmers having knowledge of the maize potentials on the Middlerest soils from 8 to 60 by July 1998	27 June, 1998	Sample survey Question No. 25
1.1.3	To increase the number of farmers being convinced that a higher yield will lead to lower risk (or higher profitability) from 25 to 75 by 1 September, 1998	27 June, 1998	Sample survey Question 22
1.2	To increase the number of farmers growing the recommended cultivar(s) from 25 to 80 within a period of 1 year	January, 1999	Records of Seed Companies
1.2.1	To decrease the number of farmers overrating the effectiveness of their cultivars from 65 to 32 by July 15, 1998	May 25, 1998	Evaluation form at cultivar demonstration
1.2.2	To increase the number of farmers having knowledge of the recommended cultivars from 41 to 85 by July 15, 1998	July 15, 1998	Sample survey Question 18-20
1.2.3	To increase the number of farmers that are convinced that the recommended cultivars can contribute towards a higher yield, more drought resistance from 37 to 85 by July 15, 1998	July 15, 1998	Sample survey Question 21-24
1.2.4	To increase the number of farmers preferring the recommended cultivars to their own or other cultivars from 20 to 75 by July 15, 1998	July 15, 1998	Sample survey Question 17
1.2.5	To increase the number of farmers being aware of the following advantages of the recommended cultivars to 65 by August 20, 1998: higher yield • better grain quality • higher disease resistance more drought resistance	August 20, 1998	Telephonic sample survey: Question No 14
1.2.6	To decrease the number of farmers being concerned about the following disadvantages of recommended cultivars from 72 to 30 by August 20, 1998.	August 20, 1998	Telephonic sample survey: Question No 14
1.2.7	To remove the constraint of seed shortage experienced by 20 percent of the farmers before October 1, 1998	August 20, 1998	Telephonic sample survey: Question No 14
1.3	To increase the percentage maize planted before 15 November from 20 to 70 %	etc.	etc.

*Questions referred to are those used in previous (bench-mark) surveys.

Figure 7. The Evaluation Document

One of the most appropriate ways of reporting on the progress and achievements, but also problems and failures, is through monthly reports submitted to the program committee at its monthly meetings. They should be supplemented by annual reports and later, at the conclusion of the program, by a final report.

CONCLUSIONS

The main function of evaluation, over and above the important purpose of accountability, lies in the improvement of present and future extension. Especially for improving the present extension, a form of monitoring is required that gives an indication, whether the program is still on track, what progress is made and whether adaptations need to be made or not. For this purpose the intervening variables or

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cognitive field forces of needs, perceptions and knowledge provide a suitable measure, and should consequently also feature in the specific objectives.

A monitoring based on cognitive aspects (intervening variables) is also bound to be a more just and fair measure of the extensionist's achievements. However, from an accountability and accreditation point of view, it is paramount that over and above the program objectives, working objectives be formulated to cover all his activities, even though they may be only of an input nature. For management this has advantages from a control point of view, which, under normal conditions, could be counter productive, but in South Africa with its current notoriously low level of delivery, this might be the lesser evil.

Proper evaluation places high professional and scientific demands on extensionists and calls for urgent in-service training programs. In the interim period it may be appropriate to let untrained extensionists operate as assistants to professional extensionists taking responsibility and ownership for programs beyond a single extension ward.

Unless every effort is made by extension to be truly accountable the aspect of affordability may rule out public or state extension services sooner rather than later.

REFERENCES

DE KLERK, C.H. & DÜVEL, G.H., 1982. Human and environmental influences in practice adoption and reproduction efficiency in the high potential cattle farming areas of South West Africa. *South African Journal of Agricultural Extension,* 11:1-15.

DÜVEL, G.H., 1975. The mediating function of perception in innovation-decision. *South African Journal of Agricultural Extension*, 4:25-36

DÜVEL, G.H., 1987. Situation determination : From theory to a practical model. *South African Journal of Agricultural Extension, 11:27-33.*

DÜVEL, G.H., 1991. Towards a model for the promotion of complex innovations through programmed extension. *South African Journal of Agricultural Extension*, 20:70-86

DÜVEL, G.H., 1995. Resistance against stock reduction: A cognitive field analysis. *South African Journal of Agricultural Extension*, 24:45-60.

DÜVEL, G.H., 1997. An interdisciplinary model for behavior analysis and intervention in Agricultural Extension and Rural Development. Journal of International Agricultural and Extension Education, Vol. 4 (3): 55-65.

DÜVEL, G.H. & AFFUL, D.B., 1994. *Human constraints in stock reduction and communal land management in a subsistence farming situation in South Africa.* South African Institute for Agricultural Extension, University of Pretoria, Research Report : Unpublished.

DÜVEL, G.H. & BOTHA, A.J. 1990. *The conservation behavior and perception of farmers in respect of the environment and recommended conservation.* South African Institute for Agricultural Extension, University of Pretoria (Unpublished Research Report).

DÜVEL, G.H. & SCHOLTZ, H.P.J., 1986. The non-acceptability of recommended veld management practices. *South African Journal of Agricultural Extension, 15:1-10.*

LEWIN, K., 1951. *Field theory in social science*. Selected theoretical papers. New York : Harper & Row.

LOUW, J.C. & DÜVEL, G.H., 1978. Differential perception : A communication obstacle. *South African Journal of Agricultural Extension*, 7:3-14.

MARINCOWITZ, G.J.O. & DÜVEL, G.H., 1987. The role of needs in the adoption and promotion of boergoat farming. *South African Journal of Agricultural Extension, 16:11-18.*

AN EVALUATION OF THE FAMILY SUPPORT PROGRAM IN AKWA IBOM STATE, NIGERIA

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Abstract

The primary purpose of this study was to examine the extent to which the Family Support Program (FSP) was able to reach the rural women in Akwa Ibom State (AKS), Nigeria. This was achieved by four specific objectives. Data was collected from a convenient sample of 38 FSP members from the target population of the state. Results of data collected through personal interviews and group interviews showed that the average age of participants was 35. The majority of them were married and engaged in such businesses as farming and trading with an average monthly household income of 3,000 Nigerian Naira. The study also showed that the women were not adequately aware of the program activities. Consequently, the program did not improve FSP participants' lives. This suggests that the program was not an effective tool for reaching the rural women in that area of Akwa Ibom State.

INTRODUCTION

Women in Economic Development

Women have an important role in economic development, and should be considered in national development planning. Unfortunately, this has not occurred. Sustainable development has traditionally neglected the contribution of women until recently when they have been integrated into economic and social development through activity groups (James, 1998). Studies have found that women perform more effectively in organized groups than as individuals (UNIFEM, 1997). Programs involving women's groups have proved to be effective in some developing countries, such as Malaysia and Bangladesh. This exploratory study was conducted to examine the influence of a similar group in Nigeria to reach and assist rural women.

Despite the well-known fact that raising the educational levels and economic opportunities for women would have positive effects on better nutrition and education for the family (UNIFEM, 1997), the prevailing conditions for women in most developing countries portray a stark image of poverty and suffering among women and children that could be improved. For example, of the 5.7 billion people in the world, 1.5 billion are desperately poor, living on the equivalent of $370 per person per year. Two-thirds of the world's poor live in rural areas (UN, 1996). Seventy percent of the world's poor are women (UNDP, 1995). Nearly 800 million people in the developing world do not get enough food, and about 500 million people are chronically malnourished (UNDP, 1996). It is reported that more than 12.5 million children under five die each year in developing countries, 9 million of them from causes for which inexpensive solutions exist. (UNICEF, 1997). Women farmers are said to receive less than 10 percent of agricultural extension delivery services in Africa, though they form 60 to 80 percent of the agricultural labor force (FAO, 1998). Recent migration trends show a proportionally higher out-migration of males than females to urban areas (FAO, 1998). This leaves many female-headed households in the rural areas, with minimal income to care for the family.

Developing Country Programs For Women

As a result of substandard living conditions of women and children in most developing countries, the current trend is towards the integration of rural women in economic planning and implementation in some developing countries (James, 1998). One strategy used has been to organize women into groups for the purpose of acquiring small business loans to enable them to start or expand cottage industries for the benefit of their families and society at large. The Grameen Bank Project in Bangladesh (Hossain, 1998), and the women's income-generating projects in Selangor State in Malaysia (Ismail, 1997) are examples of the success of this strategy. According to Hossain, Grameen Bank assisted families can now afford better homes, food, and clothes and can send their children to school. Ismail also reported that the women income-generating projects have increased household income, provided employment for women and their families, and increased participation of women in project decisions and implementation activities.

Nigeria's Family Support Program

The Family Support Program (FSP) began as the "Better Life for Rural Women Program", a 1987 presidential initiative to integrate rural women into the economic development of Nigeria. The long-range goal of FSP is to alleviate poverty, ignorance, and illiteracy among Nigerian women through education, employment, and economic empowerment (Nyong, 1992). The Family Economic Advancement Program (FEAP), a subsidiary of FSP, was initiated in November 1997 to promote self-employment and advance credit to members. FEAP offers FSP members small business loans between 50,000 and 150,000 Nigerian Naira through the nation's banking system. One of the loan requirements is that FSP members form small cooperative groups of five to six individuals. The loans are intended to support the establishment or expansion of recipients' businesses.

Since its inception, the FSP has been organized in each state of the nation and has been headed by the governor's wife. The program was inaugurated in April 1988 in Akwa Ibom State which is in the southeastern part of Nigeria. According to the official 1991 census, the state had a population of about 2.36 million people (Uforo Iban, 1992). It was felt that the influence of the program in reaching and assisting rural women participants in Akwa Ibom State would provide useful information to program personnel.

PURPOSE OF STUDY

The primary purpose of the study was to determine the extent to which the Family Support Program has been able to assist rural women in the Uyo Local Government Area of Akwa Ibom State, Nigeria. The specific objectives were to:

Describe the demographic characteristics of FSP participants.
Determine the awareness of rural women of FSP and its activities.
Determine the extent to which rural women participate in FSP activities.
Determine the influence of FSP on the lives of participants.

METHODOLOGY

Population and sample

The target population was Family Support Program participants in Akwa Ibom State. The Chapter President located a purposive sample of 37 members and herself for the study. The participants were mainly from two clans or administrative areas namely Etoi and Oku of the Uyo Local Government Area. The 38 members who were available and willing to participate in the study were individually interviewed, and also participated in four group interviews to elicit opinions about the Family Support Program.

Instrumentation and Data Collection

The researcher developed an interview schedule with questions focused on the study's objectives. Data on demographic characteristics of members and their awareness of and participation in FSP activities were gathered using fixed choice questions. A 5-point Likert type scale was used to determine agreement – disagreement with selected statements on the influence of FSP on members. Open-ended questions were also included. This instrument was used for the individual interviews. The open-ended questions and ideas generated from the personal interviews were used in the group interviews. The instrument was not validated due to time constraints.

Other limiting factors of the study were the difficulties encountered by the researcher due to the onset of the rainy season, and transport and communication facilities. The researcher had only five weeks to collect data. The rainy season caused meeting cancellations and low turnout of participants. Transportation was complicated by deplorable road conditions, and high cost of fuel. Communicating properly with grassroots members required personal contacts, which were not possible. The presence of the FSP Chapter President in the group interviews could have biased member responses. However, there was no better alternative given the short duration of the study and the fact that the researcher was not residing in the state where the study took place.

The first step in data collection was to obtain permission from the Akwa Ibom State officials to conduct the study. Personal interviews with all 38 women nominated by the Chapter President were conducted. Four group interviews were held with the respondents to gain further insight and different ideas from the participants. Data were collected in a period of five weeks, during July and August 1998.

Data analysis

The data were analyzed using the statistical package SPSS for MS Windows Release 8.0. Frequencies and percentages were used to summarize the data.

RESULTS

Objective 1

The first objective was to describe the demographic characteristics of the respondents (Table 1). While 30 of the respondents answered that they were between the ages of 26 and 45, eight of them indicated that they either did not know their ages or were over 45 years. More than 60% of the respondents indicated that they either had no formal education or very little education. The study showed that 33 of the 38 respondents were married. A majority (95%) of the respondents indicated that they made between 1,000 and 5,000 Nigerian Naira per month. However, when details were discussed in the group interviews, the members indicated that they either could not determine their spouses' incomes or only had one source of income for the family. This suggests that what participants indicated as their individual monthly income was actually their household income. Among the 33 married respondents, 29 of them indicated that they had more than five children. Over 60% of the participants answered that they were either farmers or traders. Members indicated that, on the average, their spouses' occupations were mainly in the area of farming.

Table 1
Demographic characteristics of respondents

Characteristics	Frequency	Percent
Age in years		
26-35	17	44.7
36-45	13	34.2
Over 45	8	21.1
Total	38	100.0
Educational level		
No formal education	23	60.5
Primary school graduate	12	31.6
Secondary school graduate	2	5.3
University graduate	1	2.6
Total	38	100.0
Marital status		
Married	33	86.8
Widowed	5	13.2
Total	38	100.0
Monthly household income in Naira		
1,000-5,000	36	94.7
10,000-15,000	1	2.6
Over 15,000	1	2.6
Total	38	100.0
Number of children		
2-5	9	23.7
More than 5	29	76.3
Total	38	100.0
Member occupation		
Farming	12	31.6
Trading	12	31.6
Other occupations	14	36.8
Total	38	100.0
Spouse occupation		
Farming	22	57.9
Teaching	1	2.6
Trading	10	26.3
Other occupations	5	13.2
Total	38	100.0

Objective 2.

The second objective of the study was to determine the awareness of rural women of the Family Support Program and its activities. This was addressed by two questions - (a) "The association staff give me the information I need in a timely manner", and (b) "What sources do you use to get information about the association?" Responding to the first question, most participants strongly agreed (2.6%) or agreed (86.8%) that information was received in a timely manner. However, in response to the second question, they indicated that radio, television, and friends were their main information sources. Specifically, 68% of the participants indicated heavy reliance on friends. Therefore, while members may have thought they received information in a timely manner, when individually questioned, the group interviews brought out the fact that members' perception of what is "timely" is relative, and personal. It is obvious that friends, on whom members relied for information, have to get this information from formal sources such as a meeting, forum, radio or television. This suggests that members may not be as well aware of features and activities of the program as they feel they were.

Objective 3

The third objective was to determine the extent to which rural women participated in FSP activities. A majority of the respondents (52.6%) indicated that they had been members in the program for three or more years (Table 2). Respondents who had been involved less than six months later explained in the group interview that they had also participated in the Better Life for Rural Program.

A majority of the participants (97.4%) indicated that they had not received any kind of training or formal instruction since they became members of the FSP. Only seven members either agreed or strongly agreed that they had each received 600 Nigerian Naira in loans.

Table 2
Length of Membership in the Family Support Program

Length of membership	Frequency	Percent
Less than 6 months	3	7.8
6 months – 1 year	7	18.4
1 – 2 years	8	21.1
3 – 4 years	11	28.9
Over 4 years	9	23.7
Total	38	100.0

Objective 4

The fourth objective was to determine the perceived influence of FSP on the lives of program participants. Most of the participants (81.6%) disagreed that the association helped them to start their businesses.

Table 3 presents the summarized responses to a series of statements on a 5-point Likert type scale of agreement – disagreement. The majority of the participants (76.3%) disagreed that they had received any money management skills as a result of joining the program. Only 7.9% of the respondents indicated that they received any bookkeeping instructions from the program. Five out of the 38 respondents indicated that they had received help on marketing their products. All the respondents reported that they found the FSP staff easily accessible. Also, most of the participants either agreed (68.4%) or strongly agreed (31.6%) that the FSP staff were friendly to work with. Seventy-four percent of the respondents indicated that their businesses had not improved since they joined the program. A majority of the participants (68.4%) reported that they had not learned how to preserve surplus products since they joined the program. Out of the 38 respondents, 28 agreed and two strongly agreed that they were in the overall, satisfied with the program. However, in the group interview interaction, most of the participants indicated that their satisfaction came from believing that eventually their efforts would pay off. This suggests that members may not be as satisfied as they indicated. It is therefore obvious that the program has not influenced the members' lives in any visible way.

Table 3
Perceived influence of FSP on the lives of participants

Variable	Frequency	Percent
Money management training		
Strongly disagree/Disagree	30	79.0
Not sure	0	0.0
Strongly agree/Agree	8	21.0
Total	38	100.0
Bookkeeping instruction		
Strongly disagree/Disagree	35	92.1
Not sure	0	0
Strongly agree/Agree	3	7.9
Total	38	100.0
Marketing products		
Strongly disagree/Disagree	33	86.8
Not sure	0	0.0
Strongly agree/Agree	5	13.2
Total	38	100.0
Staff accessibility		
Strongly disagree/Disagree	0	0.0
Not sure	0	0.0
Strongly agree/Agree	38	100.0
Total	38	100.0
Staff friendliness		
Strongly disagree/Disagree	0	0.0
Not sure	0	0.0
Strongly agree/Agree	38	100.0
Total	38	100.0

Business improvement		
Strongly disagree/Disagree	28	73.7
Not sure	0	0.0
Strongly agree/Agree	10	26.3
Total	38	100.0
Surplus product preservation		
Strongly disagree/Disagree	26	68.5
Not sure	0	0.0
Strongly agree/Agree	12	31.5
Total	38	100.0
Member satisfaction		
Strongly disagree/Disagree	5	13.1
Not sure	3	7.9
Strongly agree/Agree	30	79.0
Total	38	100.0

There were two open-ended questions on the instrument. (a) "If I was the Executive Director of this association, I would change…?" and (b) "Any other comments or suggestions?" which were used mainly to generate group interview topics and recommendation ideas. In answer to the first question, the top three suggestions for change were – (a) providing no interest loans and reducing paper work, (b) better means of transportation for workers, and (c) free materials/financial subsidies for new members. Suggestions included –surprise site inspections to monitor progress and background check on loan applicants.

CONCLUSIONS

Although similar programs have reported remarkable success in Malaysia and Bangladesh, the results of the study of the Family Support Program in its tenth year in Akwa Ibom State were disappointing and indicate areas of improvement. While FSP members felt they received program information in a timely manner, the reliance on friends and the media as information sources would indicate a low level of awareness of FSP activities. Most members did not receive any formal training or financial support, nor did they improve production as a result of their membership in the program.

The influence of FSP on the lives of members has been minimal. This conclusion is supported by the finding that FSP did not provide help to most members in starting their businesses or providing training, financial management and marketing assistance. If anything, the program's impact could be classified as negative, because of the amount of personal money invested by members.

RECOMMENDATIONS

While government reports tout the success of the program (John, 1998), the findings of the study reveal a number of weaknesses and inherent problems. These need to be addressed and appropriate solutions found, including encouragement of private sector banking, improving communication with members, and facilitating their participation in FSP activities. A comprehensive and independent evaluation of the program should be conducted which will provide information helpful to policy makers and program developers.

FSP members suggested changes to the program, including better communication and transportation. Other suggestions for improvement included close supervision of member projects for timely problem intervention, low cost loans, and less paper work in the establishment of cooperative groups. It is recommended that these suggestions be considered by the FSP management in keeping with the principles that the voices of intended program beneficiaries should be heard for a program's objectives to be accomplished.

References

Akwa Ibom State Government Document: "Better Life Program Quarterly Reports, January – March, 1991". The Government Printer, Uyo.

Coles, C. & Entwisle, B. (1985). Nigerian women in development: A Research Bibliography. Crossroads Press, Los Angeles, California. Pp. 83-87.

FAO, (1998). Improving the delivery of agricultural extension services to women farmers. [Online]. Available: http://www.fao.org/WAICENT/FAOINFO/SUSTDEV/Wpre0014.htm. September 12, 1998.

Hossain, I. (1998). An experiment in sustainable human development: The Grameen Bank of Bangladesh. Journal of Third World Studies, XV, 1, 39.

Ismail, M. (1997, Fall). Accomplishments of rural women's income-generating projects in Selangor State, Malaysia. Journal of International Agricultural and Extension Education.

James, V. U., (1998). Women and sustainable development in Africa. [Online]. Available: http://info.greenwood.com/books/0275953/02753998.html, October 22, 1998.

John, J. (1998, July-September). Income-generation/empowerment. Unwam, 1, 3, 22.

Nyong, V. A. (1992). Better Life Program, Akwa Ibom State: A tool for women development. Akwa Ibom State Government publications. P.30.

Uforo Iban (1992, October). A souvenir publication of Akwa Ibom State better life program, to mark the commissioning of the Maryam Babangida center for women development, Abuja.

UN. (1996). Eradication of poverty. [Online]. Available: http://www.care.org/devrescenter/devfact.html, June 23, 1998.

UNDP. (1998). World development facts. [Online]. Available: http://www.care.org/devrescenter/devfact.html, June 23, 1998.

UNDP. (1995). Human development report. [Online]. Available: http://www.care.org/devrescenter/devfact.html, June 23, 1998.

Outreach Profiling at ISU

A Paper For Presentation

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Outreach Profiling at ISU
Abstract

Introduction

This paper reviews a process of *profiling,* being utilized by the Iowa State University Department of Agricultural Education and Studies to align outreach efforts with its mission and vision for the coming century. With the Kellogg Foundation and others calling for a "re-invention of the concept of land-grant universities", it is time for **Revisiting Extension Before the 21st Century**. In fact a re-visitation of the total outreach function at universities is in order.

Purpose

To share with the reader the process of profiling by considering the departments' *enterprise units, resource distribution, and product mix.* Such constructs are readily utilized by private enterprise, on a continuous basis, to analyze their business processes. The paper contends that university agricultural education departments might profit from following industry's example.

Methodology

Face-to-face one-hour interviews were conducted with each faculty and staff member. They were asked to indicate how they spend their departmental time and with which clients they spend it. Responses were categorized by product, client, and process for analysis by the faculty member conducting the inquiry.

Conclusions

At ISU, 22% of faculty/staff time is currently being spent on outreach work. Current primary clients of the department and the percentage of total outreach time spent with them are: public schools (49%), extension (26%), departments in the college of agriculture (17%), agricultural business and industry (8%). The departmental outreach *products* and the percent of outreach delivery they represent are: in-service education (40%), program support (17%), project development (12%), evaluation (10%), instructional design (10%), and organizational development (5%).

Educational Importance

This paper contends that departments have a number of questions to ask themselves and a number of answers that must be derived in order to be poised to move into the new millennium. It suggests that such a process may be crucial to the realization of missions, visions, and organizational vitality.

OUTREACH PROFILING AT ISU

BACKGROUND

Many universities are trying to re-define the land-grant mission. They are currently spending considerable human and financial resources rebuilding a very old concept. They are indeed **"Revisiting Extension Before The Start of The 21st Century."** Historically such a mission implied that institutions of higher education incorporated resident instruction, research, and outreach into their work. Toward the end of the 19th and early in the 20th century the land-grant concept really meant the "Peoples University." The idea was to be inclusive of and tackle the problems of real people, farmers, merchants, families, rural communities, etc. The focus was to literally utilize the university's knowledge as an outreach to help people solve problems.

Currently the Kellogg Foundation is investing major dollars in programs that "reinvent" the land-grant idea for the 21st century. Of particular importance in that effort is the concept of engagement. Engagement of different colleges and departments within colleges to research and address the needs of the people of respective states, countries and the world at large.

So what about your own agricultural education department? What defines its land-grant role? What does your faculty and staff consider as the appropriate ratio of human and financial outreach expenditures as compared to those in instruction, research, and service? The Iowa State Agricultural Education department, by asking some of these kinds of questions, is trying to take a fresh look at how it utilizes its human and financial resources within the outreach function.

THE PROCESS OF PROFILING

In modern business, organizational, and program management models the concept of *enterprises* is often utilized. Enterprises translate as organizational business units. As such, in agriculture, a farming operation might be thought of as several enterprises like a farrow to finish operation as one business unit, supportive cropping systems as another enterprise, feeder pigs as another, with possibly a cash tomato crop as yet another. Most successful farming operations continuously work for an integration of their enterprises. That integration of enterprises into a system plays a very important role in determining the competitiveness of the entire operation. Successful operations carefully examine the individual pieces of their business to determine how they interact with one another. Continuous scanning of primary and secondary enterprises as well as the organization's commitment to them helps to determine if the individual enterprises will complement or compete with each other. Remaining competitive is contingent on constantly creating, new product lines, new markets, and new marketing strategies within and among the enterprise units. Nonaka and Kenney (1991).

Carr and Johansson (1995) note that "In today's business environment, an essential element of organizational success is adaptability. You must be able to manage at the speed of change, and that takes creativity and innovation." In this case creativity is defined as the generation of alternatives and innovation as the transformation of those alternatives into applications that lead to change and improvement.

The question of Agricultural Education and/or Extension's speed of innovation has been raised, re-raised, discussed, queried, pondered, and argued in adnauseam. A huge degree of creativity and an off beat sense of humor would have to be mustered to term our transitions as moving "at the speed of change."

Well defined, forward movement often starts with a business plan. Business planning is an organized, logical process to look at all of the important aspects of a business. Good business planning actually saves far more time than it takes. Virtually every business has finite resources. Those resources must be allocated where they can do the most good in light of the mission and vision of the business. In fact, resource allocation is the major focus of business planning. Experience has shown that plans which are not focused will not work. When there are more than three or four major focal points to deal with, in a business unit, priorities get lost. Focusing on 3 or 4 areas doesn't mean that others will be completely ignored. Normal business processes will address most of the non-focus areas. In the business arena, without a business plan nobody will invest in your ideas or efforts.

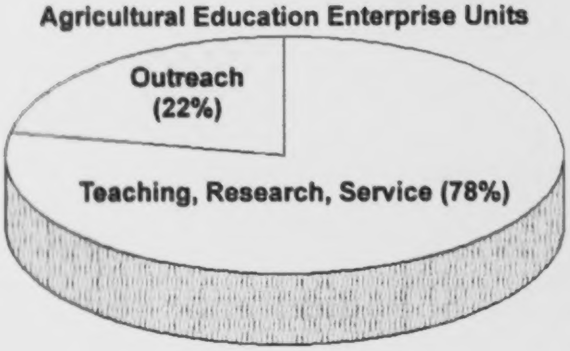
Ag Ed at Iowa State University, in the fall of 1997, decided that good business planning made at least as much sense within education as it did in the business world. The department has been in the continuous process of developing and living a vibrant business plan. As a beginning aspect of such a plan, a process of *profiling* has been set in motion. Business profiling essentially is the describing of the reasons and purposes for which the unit is doing business. Profiling details the competencies that the unit offers to its' clients, but not by merely naming them. Profiling is inclusive of descriptions of each competency and of each client all the way through to faculty development planning that identifies current and deficit skills necessary to deliver what is valued by the client.

ISU's Outreach Profile is an attempt to help the department more realistically look at where its resources are currently being invested. If the efforts are on track, wonderful. Efforts to remain on track need to be in place and actively pursued. On the other hand, if a different posture is required to position the department toward its preferred future, outreach may need to look somewhat different.

The Agricultural Education profiling process at ISU was developed by Dr. Lynn Jones, a faculty member with 25+ years of active involvement in all levels of the extension function of land-grant universities. The process started with interviewing. Jones spent 45 minutes to an hour with each of 18 staff and faculty members in the department. Each individual was given the same scenario to set the stage for the interview. That scenario involved imagining that the department had a new accountant who needed to know how to budget and bill time for services. Interviewees were asked to think of their work in three categories. One category being credit instruction; a second, sponsored research, and a third outreach. They were then asked to consider only the outreach category. What specific audiences were the recipients of their outreach work? Once the interviewer had recorded the audience categories, respondents were then asked to indicate what methods they utilized for the delivery of outreach to their audiences. Finally each staff /faculty member was asked to give an accounting of the actual time they believe they spend with each audience category in each method they reported.

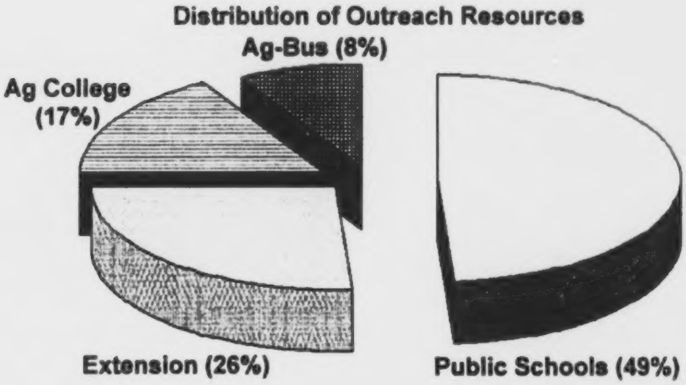
THE RESULTS OF PROFILING

In farming or any other business management planning, *Enterprise Analysis* is a continual search for alternative types of business emphasis or alternative methods of producing and marketing goods and services. One of the first steps in enterprise analysis is to determine the business process. The ISU profile indicated that the faculty/staff consider the department as having four distinct primary business units or enterprises. Those being teaching, research, service, and outreach. Responses indicated a perception that outreach accounted for 22% of total faculty/staff output.



A department choosing to profile their activities and utilize enterprise analysis would need to focus several questions for internal review, for any of their endeavors. For outreach those factors are:

- Current departmental outreach portfolio
- Current and anticipated departmental focus
- Compatibility of existing enterprises with future vision
- Potential of each enterprise for developing longer term competencies



Profiling involves taking a very close and continuous look at the outreach distribution in terms of audiences served. In the past university outreach has been thought of as primarily centered on the Cooperative Extension Service. At Iowa State the various colleges have indicated that extension is certainly not the only outreach mechanism within their vision. Some feel their continuing education and professional development work along with their distance learning efforts are outreach but not outreach delivered or administered by Cooperative Extension. According to the interviews, the distribution of the ISU Agricultural Education and Studies outreach resources included outreach to schools (49%), Extension (26%), departments in the college of agriculture (17%), and outreach to agricultural business and industry (8%).

An analysis of outreach must provide answers to several questions regarding the distribution of resources. Do the four client groups of public schools, extension, ISU ag departments, and Iowa agribusiness and industry need to be the future departmental focus? Further, public school work has been primarily directed toward vocational agriculture classes and FFA. Should 49% of the outreach resource continue to be directed in that manner? Perhaps there should be a shift of attention toward community colleges, universities in other states, government agricultural entities, or other configurations. Or suppose the current mix of audience targets is maintained. Is that mix appropriate for the departmental vision? Should more time be spent with one audience and proportionately less with another?

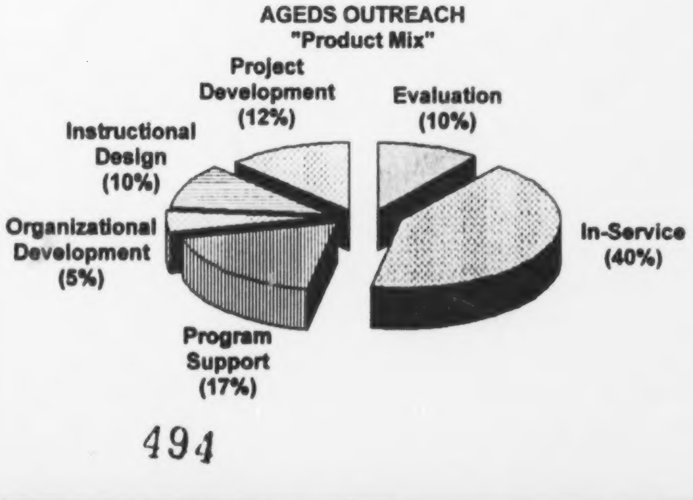
Outside the walls of universities, in the world of business, the concepts of primary and secondary enterprises are absolutely crucial to planning. Primary enterprises are the focus of *competitive advantage.* Factors that make up an organization's competitive advantage are the characteristics that help it perform better than its competitors in the market place. *Secondary enterprises*, though good in-and-of themselves, also may help an organization to keep the primary focus. They may provide resources that enable the organization to target its competitive advantage. Organizational vitality is fostered by defining and keeping in very clear focus those activities that are primary to organizational success as well as those that take secondary roles, which support the primary enterprise.

Activities falling outside the defined primary and secondary enterprise units are considered as resource drainers. "Drainers" divert an organizations resources away from its primary mission and the realization of its vision. Such activities are considered outside the product mix.

As ISU Agricultural Education considers the distribution of its resources to the various clients within outreach along with teaching, research, and service, perhaps one of the very most critical areas that will need to be addressed is the product mix. Product mix has to do with the variety of products or services an organization has available to distribute to its clients and potential clients.

During the profiling interviews, faculty and staff indicated that their outreach work, on the whole, centered on a mix of six basic *products*. The current outreach product mix for ISU Ag Education focuses 1) on the delivery of in-service education to extension staff and high school vocational agriculture instructors, and 2) on provisinf support to the development of ongoing programs for extension and public school agricultural education. These efforts might be considered as the primary products of the expenditure of AGEDS resources. Secondary products of the department complete the mix of 6 products,3) project development, 4) assistance with evaluative efforts, 5) organizational development assistance, and 6) instructional design.

Departments would benefit from being engaged in analysis of their primary and secondary product mix. For example, if AGEDS at Iowa State were to say it wishes to be known for educational assistance in instructional design, answers for the question, "Will the expenditure of 10% of outreach resources likely bring recognition to the department as a prominent resource for



instructional design?" Utilizing figures from this inquiry, the numbers indicate that 22% of total time resources are expended for outreach and 10% of those resources are used for instructional design. Using full-time equivalency as 220 working days per year from a group of 17 staff as a formula, a total of 82 days go toward this particular effort. That figure equals about 1/3 FTE allocated to instructional design outreach. Is this adequate for prominence? You be the judge.

Enterprise analysis can be an extraordinarily critical and useful tool but it requires tough dialogue and planning within a department. But aren't all business decisions tough? Shouldn't a department utilize data and struggle with decisions? Why should departmental enterprise and product mix decisions be any less difficult, for example than herd culling decisions for the dairy farmer?

All good business plans must begin with carefully orchestrated strategies. According to Davis & Devinney, the development of good business strategies is based on three simple points: (1) Customers have specific *value propositions* that (2) organizations attempt to satisfy by bringing to bear their underlying *resource base* which (3) they transform into products and services through their *business processes*. Davis & Devinney find this approach useful because it focuses thinking on:

- Understanding, measuring and dissecting current and future client value
- Understanding, measuring, mapping and managing current and potential business processes, and
- Understanding, measuring, managing and developing the organizations fundamental resource base

Strategies that lack such focus are not only non-sustainable; they also lack competitive advantage. To gain and sustain a competitive advantage in the business of outreach, Agricultural Education must understand the terrain, understand the stakeholders and their motivations, and understand the knowledge base of the clients with whom they seek to do business.

Once such ideas are brought into focus a through exploration the implications that such transitions bring to bear on administration, teaching, research, funding, hiring and other vital issues will need critical analysis.

Agricultural education outreach profiling at Iowa State University only begins the intense and important process of raising more and more questions and concerns begging for answers. For example:

- Is the current 22% ratio of outreach to teaching-research-service the appropriate mix for the department?
  -If yes, how shall that ratio be maintained?
  -If no, what should be the ratio?
  -How shall inputs be set in motion toward the desired ratio?
- Is the current distribution of resources to clients what the department wants?
  -If yes, how will the distribution be maintained?
  -If no, what should be the revised distribution?
  -How should adjustments be made?

- Does the department have the best product mix for its capacities? Is the mix where they wish it to be?
  -If yes, how shall the mix be maintained?
  -If no, what mix should they strive for?
  -How shall the department begin to make those adjustments?
- If markets are to be expanded, does the department know what products clients in new markets are interested in or place a high value on?
  -If yes, is there anything holding the department back from proceeding?
  -If no, how might they find out what the new client's value?
- Does the department have the products that an expanded market will value?
  -If yes, what is the departmental marketing plan to begin putting current products in the hands of new markets?
  -If no, how shall the department begin the development of new product lines?

Higher education might learn a lot from the world of business. If your department was a private enterprise it would constantly keep in focus what might be the ultimate outreach questions like:

- Who is it we intend to reach with our efforts?
- How do we become sufficiently attractive to them to cause them to pursue us?

Think about outreach profiling for your department. You may be suprised what you can learn from basic business practices.

References

- Carr, D.K. and H.J. Johansson (1995). *Best Practices in Reengineering,* McGraw-Hill, Inc., New York NY.
- Davis, Jeremy G. and Timothy M. Devinney. *The Essence of Corporate Strategy*. Australian Graduate School of Management, University of New South Wales.
- Nonaka, I. And M. Kenny (1991). "Towards a New Theory of Innovation Management: A Case Study Comparing Canon Inc. and Apple Computer Inc., "*Journal of Engineering and Technology Management*, Vol. 8, pp. 67-83.
- Schermerhorn, Richard, W. Leader, Extension Agricultural Economics. *Is Your Agribusiness Project Feasible?* University of Georgia College of Agricultural and Environmental Sciences/Cooperative Extension Service. Bulletin #1066/ (1991).

THE CONDUCT OF UNDERGRADUATE TEACHING OF AGRICULTURAL EXTENSION AT THE UNIVERSITY OF THE WEST INDIES TRINIDAD AND TOBAGO

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ABSTRACT

Since the decade of the sixties , the subject of Agricultural Extension has been offered to students reading undergraduate degrees in Agriculture at the University of the West Indies, Trinidad and Tobago.

Initially the subject was part of the offerings in an economics programme. Following this it had autonomous identity within a Department of Agricultural Extension for seventeen academic years. Recently it reverted to a new status as an offering within a merged Economics and Extension Department.

Using data from University records, student evaluations and the author's continuous link with the programme several conclusions are arrived at as follows:

The subject has contributed to the degree offerings of the Faculty of Agriculture and Natural Sciences through a core course programme.

For most students the learning experiences which are provided are the sources of their understanding of sociological issues especially of rural development.

A direct link with Extension systems of the countries from which students come will enhance training opportunities.

Less students are choosing to specialise in the subject beyond a general offering.

The paper recommends the training despite incumbent institutional changes.

INTRODUCTION

The subject of Agricultural Extension was first taught at the University of the West Indies when the Faculty of Agriculture came into being. The University serves 13 contributing territories from the Caribbean region namely: Antigua & Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Jamaica, Monsterrat, St. Kitts Nevis, St. Vincent and The Grenadines and Trinidad and Tobago. In 1962, a Lecturer in Agricultural Extension was appointed with responsibility for resident teaching, research and consulting to the regions Ministries of Agriculture. Initially the portfolio was directed from the Department of Agricultural Economics and Farm Management. In 1965 a Baskette committee appointed by the University chancellor recommended a full fledged department of Agricultural Extension consisting of eight related functions in Teaching, Research and Outreach (Henderson, 1973). This department conducted its mandate from 1969 until 1996 when a very expanded University system engaged a merger to form a Faculty of Agriculture and Natural Science and within it a new Department of Agricultural Economics and Extension.

During the period 1969 to 1996, the teaching of the subject at the Undergraduate level comprised an offering of core courses sustained throughout the period and an incremental offering of elective courses. The number of courses increased from three to seven.

This presentation reflects on some of the author's relationship with lecturing and contributing to course curriculum development in Agricultural Extension at the undergraduate level at the University of the West Indies, Saint Augustine, Trinidad and Tobago. Much of the experiences represented the continued interest in offering the subject to degree students.

Much has changed and during the period 1981 to present several student records were kept. They now serve as a database for some analysis which is presented here.

It is important to keep a monitor on the teaching of Agricultural Extension at the University. The training at this level prepares one for senior positions in the agrarian sector. What students assimilate influences leadership expectations in the workplace.

There is the need to record the teaching of the subject at a time when a Department of Agricultural Extension had existed relatively autonomously. This was an appropriate institutional opportunity to achieve optimum results in teaching. More recently imperative institutional changes has relinquished much subject matter autonomy and the subject is taught in a joint department of Economics and Extension. Many other influences are present. There are new strategic plans which may replace subject matter autonomy in exchange for integrated perspectives. One needs to learn from the experience so that application of scholarship in Agricultural Extension maintains a stature in all degree offerings while blending with the changes. The experience is instructive to similar institutions with mandates for training in Agricultural Extension.

METHODOLOGY:

The paper records from the Computer Centre at the University and those from evaluations conducted by the students at the end of the learning experiences. Those from the Centre indicated scores attained by students and related examination statistics. Evaluations assessed student responses to a ten (10) question survey form. These questions relate to how the courses met objectives, choice of students and general comments. At the last class session since 1981 to present, students filled these out. Faculty booklets were used to verify historical information. Course information sheets for the years 1981 to present were reviewed.

MARTICULATION

Students rely on the training to gain an understanding of the social issues which affect Agriculture. They are especially expected to be able to cope with rural development issues. Hence new courses which have been offered are seeing the subject of Extension in a fuller sociological context.

The students who read Extension courses come from two major streams of matriculation. Either a formal secondary school education which concludes at ages 18 to 20 years or a Tertiary level diploma qualification which engages an average age range of 22 to 25 years. The number of students who are entering from the secondary school system is increasing.

Until the middle 1980's there was need to upgrade the qualifications of large numbers of staff from respective Ministries and Departments of Agriculture. These personnel were trained previously at the diploma level and entered the University to read Agriculture degrees. Most of this type of topping up of skills has occurred and thus the now larger intake of students from the secondary school system. Especially since formal educational opportunity has also increased.

Those students who entered with diplomas have been exposed to the pratice of Extension. They are more appropriately oriented to read University level Extension studies. Most of them perform with better evaluations. They tend to pursue higher degrees in the subject either locally or internationally.

The disparity in matriculation presents special challenges to teaching the subject in the classroom. Much emphasis is placed on group assignments where students are mixed in order that they can learn from each other's previous experiences. The University needs to establish more direct links with the Ministries of Agriculture of the region. Their offices and field-work environments can serve as suitable laboratories for some of the teaching activity.

A major funding endeavour from USAID during the period 1981- 1990 had helped to encourage this linkage (University of Minnesota, 1984). However when this activity closed linkages were minimised.

COURSE OFFERINGS:

Table 1 overleaf indicates subject offerings in Agricultural Extension over the period 1969 to 1999.

Table 1

Subject areas in core and elective offerings in the teaching of Agricultural Extension at the University of the West Indies (1969 to present)

YEAR	SUBJECT AREAS	OFFERINGS	
		Core	Advanced & Optional
1969 – 75	Extension Principles/Philosophy/Method Farm Practice	2	1
1975 – 80	Extension Principles/Philosophy/Method/ Communication Skills	2	1
1980 – 85	Extension Principles/Philosophy/Method/ Communication Skills	2	2
1985 – 90	Extension Principles/Philosophy/Method/ Communication Skills/Independent Research	3	3
1990 – 95	Extension Principles/Philosophy/Method/ Communication Skills/Independent Research/Gender Issues	3	4
1995 – present	Extension Principles/Philosophy/Method/ Communication Skills/Independent Research/Gender Issues/Policy Direction (Island Food Systems)	3	4

The offerings at the undergraduate level began with two of a collection of related subjects in a three-year General Agricultural degree programme. These were presented during the final year. Those students who sat and passed all evaluations in these two along with a farm methods practicum were deemed to have readied themselves for a professional career in Agricultural Extension. The two courses dealt with Extension Philosophy, Principles and Methods. The practicum engaged learning experiences in the practical aspects of livestock and crop production. This package of training obtained for six years 1969 to 1975.

During the next decade 1975 – 1985, the farm methods option was eliminated. A new communication syllabus was introduced. It catered to understanding theoretical perspectives of print, audio and minimally video. There was little exposure to the practical aspects.

Then came a period 1985 – 1990. The previous offerings continued and there were two additional aspects. Students had the option of conducting an independent research study on selected aspects of Extension. Secondly, all students must read a first year level course which exposed them to social and economic issues of an agrarian environment.

The period 1990 – 1995 continued likewise. Additionally, students had elective options in which they could further study the practice of communication and extension methods. There was a parallel development in new degree offerings namely Agribusiness, Human Ecology, Livestock Production, Agronomy and Crop Production. These students reading could elect to pursue elective training. A further elective Gender Issues in Agriculture was added.

The current period 1995 to present has maintained these offerings. This year 1998/99 a new elective 'Island Food Systems' was offered. This intended to broaden the students' understanding of the environment in which they practice Extension work.

More than 60% of the students who read the course now work in key positions of Caribbean Agricultural Institutions where Extension decisions are to be made. Assuming that the learning experiences in this training were appropriate, this curriculum has contributed to the degree training at this type of University.

Subject matter content in the core remained the same. It challenged a set of teaching objectives pertaining to Extension Principle, Philosophy and Method. An assessment of professional practice may reveal how much students practice Extension with much bias to philosophy and principle and without other required skills on the issues of Gender, Communication Skills, Independent Research in Extension and Food Policy. These newer areas of the curriculum are offered as electives. Considerably, less students read these subjects.

STUDENT PERFORMANCE:

Table 2 indicates the number of students who read a core course entitled AX319 compared to one entitled AX368, (an elective) for a ten-year period 1981 – 1991.

Table 2

Number of Students who read a core and corresponding elective course during a ten-year academic period 1981 – 1991.

ACADEMIC YEAR	COURSE AX319 (Core)	COURSE AX368 (Elective)

1981 – 82	80	12
1982 – 83	67	15
1983 – 84	47	8
1984 – 85	56	5
1985 – 86	60	6
1986 – 87	49	7
1987 – 88	53	8
1988 – 89	80	4
1989 – 90	65	11
1990 – 91	80	10
TOTAL	637	86
AVERAGE	63.7	8.6

Source: The Computer Center, University of the West Indies, Saint Augustine, Trinidad and Tobago

Table 3 which follows, further compares the two courses AX319 and AX368. It describes student performance in terms of the variables 'Failure Rate' and 'Average Percent Score'. The elective course AX368 had no failure rate. The core course had a less than five percent one. Both sets of course averages were in the same range, but the core course had the highest average. These students are further understanding the subject in their elective training..

Table 3

Failure rate percent and average score for all evaluations
during the conduct of courses AX319 (Core) and AX368(Elective)
at the University of the West Indies (1981-1991)

Academic Year	Failure Rate (Percent of Class Size)		Average Score for Evaluations at Coursework and Examinations			
	AX319	AX368	AX319		AX368	
			Average	Std. Dev.	Average	Std. Dev.

1981 – 82	0	0	58.3	6.4	54.3	4.3
1982 – 83	14	0	57.3	6.6	58.5	6.3
1983 – 84	0	0	57.5	6.0	58.1	5.3
1984 – 85	7.1	0	57.6	5.8	58.4	9.3
1985 – 86	6.6	0	56.7	9.9	61.8	5.5
1986 – 87	0	0	59.8	5.1	60.6	4.5
1987 – 88	0	0	59.9	5.8	72.2	3.5
1988 - 89	2.5	0	55.6	4.6	58.4	4.8
1989 – 90	6.1	0	57.4	6.3	63.2	3.5
1990 – 91	6.2	0	56.0	6.2	61.5	0.08

Source: The Computer Centre, University of the West Indies, Saint Augustine, Trinidad and Tobago.

CHOICE OF OCCUPATION:

Table 4 indicates choice of occupation by students during five academic years by those who sat the core and elective courses.

Table 4

Choice of Occupations by number of students who pursued General Extension Training and Specialist Training in five academic years.

Occupations	Number of Students Choosing or Don't Know	
	AX368 (Elective)	AX319 (Core)
Agricultural Economics	1 (3%)	21 (12%)
Crop Specialists	3 (8%)	21 (12%)
Extension	14 (40%)	17 (9%)
Teacher (Formal Education)	1 (3%)	13 (7%)
Agricultural Officer	1 (3%)	13 (7%)
Food Technologist	1 (3%)	11 (6%)
Don't know	14 (40%)	83 (47%)

Source: Course Evaluations, Department of Agricultural Extension,
University of the West Indies, 1981 – 1991.

Most students do not choose to pursue the Elective offerings. In a survey of students who read the degree in five academic years only nine percent who sat the core course chose an extension career. In the corresponding elective course for those academic years, 40% chose the career. The elective students in the degree have an interest in the subject, especially when 40% of the other candidates did not know what career they wished to pursue. Forty-seven (47%) of the candidates who read the core course also did not know their intended career at this time in their training.

Crop specialist careers ranked behind Extension among the elective students. Among those who pursued the core course, most students chose to be with careers in the field of crops and economics. Extension ranked second. It can be said that career choices in crops etc, economics and extension were the most popular among the students who were pursuing agriculture training at the University at that time.

CONCLUSION:

It can be concluded that the teaching of Agricultural Extension at the University level within the English speaking Caribbean has maintained itself throughout the thirty year history of the Faculty. Most students are prepared to handle general issues having been trained in core course offerings which deal with Extension principle, philosophy and method. Fewer students engage the more specialist and optional offerings and many of those who do expect to pursue a career in Agricultural Extension upon graduation.

The paper recommends the continued trend in offering the subject while blending with the institutional changes which are incumbent as they approach the twenty first century.

REFERENCES

Ellis, G.C, Report of The Study of Agricultural Extension and Education Systems in Jamaica, Puerto Rico, Trinidad and Tobago, Panama, Honduras, United States and Mexico. Unpublished, 1968.

External Evaluation Report of The Caribbean Agricultural Extension Project, Phase II.

Henderson, T.H. The University of the West Indies and Agricultural Extension Work in Caribbean Agricultural Progress, Vol. 48, 1973.

CAEP Evaluation Team, University of Minnesota, Department of Agricultural Extension, St. Paul, Minnesota, October 1984.

Regulations and Syllabuses 1997/99 : School of Agriculture, Faculty of Agriculture and Natural Sciences, Multimedia Production Centre, The University of the West Indies, 1997.

Other Papers (alternates)

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TITLE: Perceptions of Forestry and Range Organization Managers of the Role of Extension in Protection of Forests in Iran
AUTHOR: Mohammad Chizari, Satish Verma, Homayoun Farhadian
Tarbiat Modarres University, LSU Ag. Center, Tarbiat Modarres University
DISCUSSANT: Abdillahi S. Alawy

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TITLE: An Assessment of the "Task Force Approach" for Agricultural Development in the Leeward Islands
AUTHOR: Joseph Seepersad, Samuel Powell
University of the West Indies
DISCUSSANT: Mohammad Chizari

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TITLE: Assessment of Training Programme for Extension Staff of Jigawa State Agricultural Development Programme in Nigeria
AUTHOR: B.O. Ogunbameru, B.A. Adepoju, I.E. Ilevbaoje
Federal Department of Agriculture, Gwagwalada Abuja FCT - Nigeria
DISCUSSANT: Mohammad Chizari

PERCEPTIONS OF FORESTRY AND RANGE ORGANIZATION MANAGERS OF THE ROLE OF EXTENSION IN PROTECTION OF FORESTS IN IRAN

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Abstract

Perceptions of forestry and range organization (FRO) managers in selected provinces and townships in Iran of forest protection and forestry extension were determined. All administrators, their associates, and heads of forest dwellers' cooperatives were surveyed by mail. It was concluded that well-trained extension personnel are needed to provide forest owners and dwellers with information and education on forest protection; that youth in schools need to be taught the importance of forests and natural resources; that specific forest use and land use legislation is necessary to conserve forestry resources; that FRO managers need better knowledge of extension management, program and resource monitoring, and the value of involving rural women; and that FRO managers consider a variety of methods as effective in forestry extension work.

Introduction

The loss of large expanses of forests is a serious threat to human welfare and the global environment. Houghton (1990) reported that between 1950 and 1980 about 15% of the earth's forests and woodlands disappeared as a result of human activities. The largest decline was in North Africa and the Middle East (60%), followed by South Asia (43%), Tropical Africa (20%), and Latin America (19%). In the 1980s more forest was lost than in any decade in history (FAO, 1993).

Factors responsible for this loss are the conversion of forestland to produce food for a burgeoning world population, especially in developing countries (FAO, 1993; Swanson, 1997), as well as logging for timber and fuel. These are legitimate human needs and uses of forestland. But, lack of knowledge, and legal and social systems often encourage excessive, non-sustainable land clearing resulting in long-term adverse social and environmental impacts (Jones, 1987). The challenge is to manage forests and associated natural resources wisely (FAO, 1993). Sharma (1992) maintains that people around the world want natural forests to be protected, and insists that nations must manage forest resources more efficiently to benefit present and future generations. Education and involvement of people in wise management of forests are important considerations in this effort (Jones, 1987).

The forestry situation in Iran is deteriorating. A diverse genetic pool of some 12,000 plant species and a forest reserve of 12.4 million hectares are threatened by unsound forest management activities, including overgrazing of pastures, intensive agricultural operations, and indiscriminate forest activities and timber use (Report of the Islamic Republic of Iran on Forestry Development and Key Events 1996; Khosrowshahi & Ghavamie, 1994). Between 1971 and 1991, soil erosion increased by 250% (Khosrowshahi & Ghavamie, 1994).

The Forest and Range Organization (FRO) of Iran and its Research Institute are responsible for the management of 64 forest reserves. FRO managers are charged with the task of managing these forest reserves. An Office of Extension and Training in the FRO works with managers and forest landowners in forestry protection activities. Farhadian (1998) studied the FRO's mission and recommended that a strong linkage should be forged between the Office of Extension and Training and the Research Institute. He emphasized that a key responsibility of managers and staff of the FRO was involving people in planning and implementing forestry development.

Lanly (1992) supports the view that rural people should be involved in proposals about forest management because they are aware of the value of forests and often have solutions to forest management and protection problems. He contends that what rural people need is not exhortation or advice but help in doing what they know needs to be done. Extension systems can perform this task, but they need to be sensitive to indigenous cultures and not just transfer technology (Child, Heady, Hickey, Peterson & Pieper, 1984). Regardless of a project's logic, scientific soundness, management desire, or possibilities of economic enhancement, local people can implement or destroy a project, depending on whether they see it as beneficial to them. In a similar vein, Sharma (1992) emphasized that attitudes of people influence how they manage and use forests.

Mohsanie (1994) commented on the lack of knowledge among extension organization managers for developing and implementing extension activities in the Central Province of Iran and argued that proper evaluation of the managers could result in development of extension personnel and programs. Farhadian (1998) observed that a problem with most FRO extension managers was that they had agricultural degrees and little or no pre-employment extension training. A Report on Forestry Development and Key Events (1996) indicated that Caspian Sea forests are the only productive forests in the country (1996). Considering this situation, a study of FRO managers in selected provinces and townships falling in the Caspian region forests was considered worthwhile.

Purpose and Objectives

The purpose of this study was to determine the perceptions of forestry and range organization managers in selected provinces and townships in Iran of the role of extension in protecting forests. Specific objectives of the study were: (1) determine factors perceived by forestry and range organization managers to contribute to deforestation; (2) determine factors perceived by forestry and range organization managers to be effective in protection of forests; (3) determine forestry and range managers' perceived knowledge of forestry extension; (4) determine forestry and range organization managers' perception of the effectiveness of extension methods.

Methodology

The population included all administrators, their associates, and heads of forest dwellers' cooperatives (N=72) in Gilan and Gorgan-Gonbad Provinces, and Noshahr and Sarie townships. These individuals are listed in the forestry and range organization directory for the selected provinces/townships.

The survey instrument contained questions related to the study's objectives. A 6-point Likert-type scale from strong agreement (6) to strong disagreement (1) was used to elicit responses to specific statements about forestry protection and conservation, and importance of extension teaching methods. A 6-point scale prevents respondents from taking a neutral position (Clason & Dormody, 1994). A 5-point Likert-type scale was used to assess managers' self-perceived knowledge of extension work. Content and face validity were established by a panel of faculty and graduate students in the Department of Agricultural Extension and Education at Tarbiat Modarres University, Tehran, and the extension specialist in the Forestry and Range Organization. The instrument was piloted with 16 FRO managers in Tehran Province two weeks prior to the study, and needed modifications made. Cronbach's alpha reliability coefficients for sections 2-5 of the instrument ranged from .68 to .90.

First-round nonrespondents to the mailed survey were sent a postcard reminder. A follow-up letter and duplicate questionnaire was the next step. The final response rate was 90%. Early-late respondents were compared to determine if non-response was a threat to the validity of the study (Kerlinger, 1986; Miller & Smith, 1983). No statistically significant differences were found, and it was concluded that results could be generalized to the population.

Results

Factors Contributing to Deforestation

Table 1 shows the rank importance of 26 factors contributing to deforestation as perceived by managers. The number and percent of managers who strongly agreed or agreed that these were important contributory factors are included.

A majority of managers agreed that 14 of 26 factors were important contributors to deforestation. The top five factors were lack of adequate, well-trained personnel, lack of understanding of the economic importance and value of forestry, and appropriate land use, and lack of money. Inappropriate productivity by cooperatives and government companies, lack of forestry mandates, fires, and threat of pests and diseases were considered to be the least important factors.

Table 1.

Rank of Factors Contributing to Deforestation as Perceived by Forestry and Range Organization Managers.

Rank	Factor	Number[1]	Percent[1]
1	Lack of adequate well-trained personnel	49	72
2	Lack of understanding and concern regarding the role of forests in economic development among forest dwellers	48	70
3	Lack of understanding of the value of forestry	46	68
3	Lack of money	46	68
5	Lack of knowledge regarding pastures, appropriate land use and grazing among forest dwellers with livestock	45	66
6	Presence of livestock in forests	44	65

7	Illiteracy among forest dwellers	42	62
8	Lack of stable policy in administrative (executive) and Developmental tasks	39	57
9	Lack of laws or related laws regarding preservation	38	56
10	Inappropriate use of forests by rural people living near forests	37	54
10	Changing forestlands to agricultural fields	37	54
12	Inappropriate productivity (too much) from forest by private-sector organizations	35	51
12	Continuous changes in policies, legislation, and programs	35	51
14	Cutting trees by women for fuelwood	34	50
15	Making roads inside forests	33	48
15	Population increase and the need for more productivity from Forests	33	48
17	Need of forest dwellers for wood fuel	32	47
18	Lack of education among personnel	31	45
19	Lack of independent right in decision making regarding executive tasks	30	44
19	Lack of participation by forest dwellers in protection of Forests	30	44
21	Cutting trees by rural people for building houses	29	42
21	Inappropriate productivity by cooperatives	29	42
23	Lack of forestry mandate	26	38
23	Inappropriate productivity by government companies	26	38
25	Natural and unnatural fires	16	23
26	Threat of pests and diseases to plantations	15	22

[1] Number and percent of managers strongly agreeing (6) or agreeing (5) to factors.

Factors Effective in Protection of Forests

Table 2 shows the rank of 18 factors perceived by managers to be effective in protecting forests. The number and percent of managers who strongly agreed or agreed that these factors were effective are included.

Over one-half of the respondents agreed that 15 of the 18 factors were effective in protecting forests. Educating youth and students about natural resource benefits was the top-ranked factor. Also considered effective were measures such as having foresters reside outside forests, making livestock areas illegal, legislating protected areas, and evacuating-resettling farmers and nomads. Three factors rated as least effective were stopping forest productivity licenses, delegating the responsibility of forestry to people by using a participative approach, and continuity of staff and provision of equipment.

Table 2.

Rank of Factors Effective in Protection of Forests as Perceived by Forestry and Range Organization Managers.

Rank	Factor	Number[1]	Percent[1]
1	Diffusion of information on natural resource benefits to youth,	57	84

	especially students		
2	Placing (residing) foresters outside of forests	55	81
3	Making livestock presence in the forest illegal	55	81
4	Law of forests as protected area	52	76
5	Delegation of all lands outside of forests to farmers, nomads, and their evacuation from forests	51	75
6	Providing fuel for foresters	51	75
7	Increasing the general knowledge of rural people	50	73
8	Appropriate planning regarding forest productivity by specialists with government supervision	48	70
9	Establishing productivity factories by using forest inputs in creating jobs	48	70
10	Designating and fencing a place for livestock, as well as providing inexpensive feed	47	69
11	Establishing and strengthening special army units for protection of forests	46	68
12	Planting of trees	44	65
13	Implementation of forestry projects by the government	44	65
14	Delivering educational programs in raising livestock	44	65
15	Delegating the responsibility of forest protection and Preservation to cooperatives	37	54
16	Stopping forest productivity licenses	32	47
17	Delegating the responsibility of forestry to people by using Participative approach	28	41
18	Continuity of staff and provision of equipment	22	32

[1] Number and percent of managers strongly agreeing (6) or agreeing (5) to factors.

Knowledge of Extension Concepts

Managers were asked to indicate their knowledge of forestry extension work (concepts) on a 5-point Likert-type scale from know nothing (1) to know very much (5). Table 3 shows the means and standard deviations of the managers' perceived knowledge of 18 extension concepts.

Using a mean value of 3.50 and above to represent high knowledge , 3.49-2.50 intermediate knowledge, and less than 2.50 low knowledge, the data reveal that managers perceived themselves to have high knowledge of 4 concepts, and intermediate knowledge of the remaining 14 concepts. Managers had high knowledge of the objectives, philosophy and tasks of forestry extension, extension responsibilities of FROs, and extension linkages with research and education. Among the concepts that managers had least knowledge of were extension policy formulation, evaluation and monitoring, improving rural women's access to extension services, and extension systems in other countries.

Table 3.

Self-perceived Knowledge of Extension Concepts Among Forestry and Range Organization Managers.

Rank	Concepts	Mean Awareness[1]	SD
1	Objectives and philosophy of extension in forestry	3.70	0.82
2	Tasks of extension	3.64	0.90

3	The reasons for having an extension department in FRO	3.52	0.96
4	Linkage of extension, research and education	3.51	1.12
5	Use of educational technology in extension	3.47	1.08
6	Process of making contacts with rural people in extension	3.45	1.02
7	Considering various target audiences in extension programs	3.45	1.02
8	Leadership in extension	3.32	0.997
9	Rural sociology, and its importance in extension activities	3.31	1.22
10	Alternative approaches to organizing extension	3.27	0.963
11	Planning extension programs	3.25	1.08
11	Using rapid or participatory rural appraisal	3.25	1.01
11	Management in extension	3.25	1.05
14	Formulating extension policy	3.21	1.00
15	Evaluating extension programs	3.19	1.01
16	Improving rural women's access to extension services	3.06	1.26
17	Monitoring extension programs and resources	3.03	1.09
18	Extension systems of other countries	2.84	1.04

[1] Mean computed from responses on a scale: 1 "know nothing" to 5 "know very much".

Effectiveness of Extension Methods

Managers were asked to indicate on a 6-point scale their agreement-disagreement with the effectiveness of 18 extension methods in teaching forest dwellers about forest protection. The ranking of these methods according to number of managers strongly agreeing or agreeing that they were effective is shown in Table 4.

The most effective method was use of local leaders, followed by television programs, videotapes/slides, study tours/field visits, and result demonstrations. The least effective methods were lecture presentations, method demonstrations, and farm/home visits.

Table 4.

Rank Effectiveness of Extension Methods as Perceived by Forestry and Range Organization Managers.

Rank	Methods	Number[1]	Percent[1]
1	Local leaders	56	82
2	Television programs	51	75
3	Videotapes/slides	50	73
4	Study tours/field visits	50	73
5	Result demonstrations	44	65
6	Symposium/conferences	43	63
7	Forest days	39	57
8	Informal discussions	36	53
9	Group discussions	35	51
10	Posters	31	45
11	Extension publications	31	45
12	Exhibitions	30	44
13	Radio programs	28	41
14	Workshops	27	40
15	Role playing	26	38
16	Lecture presentations	21	31
17	Method demonstrations	18	26
18	Farm/home visits	8	12

[1] Number and percent of managers strongly agreeing (6) or agreeing (5) that methods are effective.

Conclusions

An adequate number of well-trained extension personnel is needed to provide forest owners and dwellers with information and education on forest protection and conservation. This conclusion is supported by the finding that managers viewed lack of well-trained forestry and extension personnel and a lack of understanding among forest dwellers of the economic importance and value of forestry and appropriate use of land as the most important factors contributing to the problem of deforestation in the study area. Swanson (1990) has reported that 40% of extension personnel worldwide are inadequately trained in technical subject-matter and extension methodology. Salmanzadeh (1988) emphasized that competent personnel, constantly updated, are required to plan and carry out education programs to meet people's needs and accomplish educational objectives.

Education of youth at the elementary and secondary school level is also necessary and important in forest protection and conservation. This conclusion is supported by the finding that managers felt that an effective factor in protecting forests is to provide information to youth, especially students, regarding the benefits of natural resources. It is recommended that managers emphasize to the Ministry of Education in Iran the need for including an appropriate course on natural resource conservation in the school curriculum.

Legal and organizational considerations are impacting forest protection and conservation. This conclusion is supported by the finding that managers perceived that making foresters live in the forest areas, and enacting legislation to ban livestock from forests and to protect forests would be effective measures in protecting forests. Currently, resources of foresters and extension personnel are inadequate to monitor forest dwellers. A sound and effectively implemented system of land use in which forest areas are demarcated and set aside as permanent forest estate is necessary for sustainable forest management.

While managers have high knowledge of most concepts that are important in extension work, they need to improve their understanding of such concepts as management, program and resource monitoring, evaluation, and policy formulation in order to carry out their job responsibilities. They also need to better understand the need for and implement education programs to reach rural women. Pezeshki-Raad, Yoder and Diamond (1994) found that extension specialists and agents in Iran lacked some of the needed professional competencies and recommended that they receive training.

A range of extension methods was considered by managers to be effective in teaching clientele. Surprisingly, farm and home visits were rated lowest on effectiveness. Perhaps, managers were reflecting financial and personnel constraints in their response. The literature, on the other hand - for example Van den Ban and Hawkins (1996) and Swanson (1997) - indicates that farm and home visits are very effective. These authors also suggest that local leaders can be useful in supplementing the efforts of extension personnel. This was also the view of managers in the study who perceived use of local leaders as the most effective extension strategy.

References

Child, R. D., Heady, H. F., Hickley, W. C., Peterson, R. A., & Pieper, R. D. (1984). Arid and semiarid lands: Sustainable use and management in developing countries. Winrock International, Morrilton, AR.

Clason, D. L., & Dormody, T. J. (1994). Analyzing data measured by individual Likert-type items. Journal of Agricultural Education, 35 (4), 31-35.

Farhadian, H. (1998). The role of extension education in protection of forests. Unpublished master's thesis, Tarbiat Modarres University, Tehran, Iran.

FAO. (1993). The challenge of sustainable forest management: What future for the world's forests. Rome: FAO

Houghton, R. A. (1990). The global effects of tropical deforestation. Environmental Science and Technology, 24 (4), 414-24.

Jones, R. K. (1987). Arid and semiarid rangelands: Guidelines for development. Morrilton, AR: Winrock International.

Kerlinger, F. N. (1986). Foundation of behavioral research. New York: Holt, Rienhart, and Winston.

Khosrowshahi, M., & Ghavamie, S. (1994). Be aware. Office of Extension Education, Forest and Range Organization of Iran, Second edition, Winter.

Lanly, J. P. (1992). Forestry issues at the United Nations Conference on Environmental and Development. Unasylva, 171, 61-67.

Miller, L. E, & Smith, K. L. (1983). Handling nonresponse issues. Journal of Extension, 21 (5), 45-50.

Mohsanie, A. (1994). An investigation of extension managers characteristics and their knowledge of management from the viewpoints of extension agents in the Central Province, Iran. Unpublished master's thesis, Tarbiat Modarres University, Tehran, Iran.

Pezeshki-Raad, G., Yoder, E. P., & Diamond, J. E. (1994). Professional competencies needed by extension specialists and agents in Iran. Journal of International Agricultural and Extension Education, 1 (1), 45-53.

Report of the Islamic Republic of Iran on Forestry Development and Key Events. (1996). Presented to the Twelfth Session of the Near East Forestry Commission. October 21-24.

Salmanzadeh, C. (1988). Consideration on improving agricultural extension organization and work in rural Iran. Quarterly Journal of International Agriculture, 27, 3-4.

Sharma, P. S. (1992). Managing the world's forests: Looking for balance between conservation and development. Dubuque, IA: Kendall/Hunt Publishing Company.

Swanson, B. E. (Ed.). (1990). Report of the global consultation on agricultural extension. Rome: FAO.

Swanson, B. E. (Ed). (1997). Improving agricultural extension: A reference manual. Rome: FAO.

Van den Ban, A. W., & Hawkins, H. S. (1996). Agricultural extension. Essex, England: Longman Scientific and Technical.

AN ASSESSMENT OF THE "TASK FORCE APPROACH" FOR AGRICULTURAL DEVELOPMENT IN THE LEEWARD ISLANDS

Samuel Powell and Joseph Seepersad

ABSTRACT

During the past 15 years a strategy known as the Task Force Approach was used in the Leeward Islands to lead the thrust towards commercialization of selected vegetable crops. The study aimed at getting a clear picture of the dynamics of the approach and its broad impact. The approach involved bringing together as a team, key individuals from public sector and private sector agencies to plan, implement, monitor and follow up, programs focusing on special crops for which markets existed. Strong support from high levels of government was also evident. In general, the approach was judged as successful. A cadre of commercial small farmers was developed and the demonstration effect has served to catalyze further development.

INTRODUCTION

The Leeward Islands comprise several small islands whose economies historically depended heavily on sugar cane and cotton. Vegetable production was later introduced to meet local needs and for export. The tourism industry developed in these islands to the extent where an additional market was secured which boosted vegetable production efforts. However, several requirements of the tourist market had to be taken into account and strategies were developed to deal with these requirements.

The numbers of the technical field staff are small and the countries depend heavily on a regional research and development institution to serve their needs. This institution, the Caribbean Agricultural Research and Development Institute (CARDI), implemented several farming systems projects. But in spite of these projects, farmers continued to experience problems with marketing their produce because marketing was production led.

The strategy to increase vegetable production had to be tailored to address the market requirements of the tourist industry and an approach known as the Task Force Approach (TFA) then emerged. This approach involved bringing together extension, research, farmers, marketing and credit agencies together as a team to guide the thrust towards commercialization of selected crops for selected markets. It is generally felt that the TFA has made a positive impact on the agricultural sector and the national economy.

PURPOSE

Although the TFA has been hailed as a success by many, it was not studied in a formal sense. This paper reports on selected aspects of a study on the TFA as follows:

1. Assessment of the usefulness and impact of the TFA on agricultural development in Montserrat, Nevis and St. Kitts.
2. Analysis of the factors critical to the TFA.
3. The role of Extension.

METHODOLOGY

The study used a descriptive research design and the sample size consisted of 144 respondents. Interviews were conducted among farmers in the three islands on their knowledge and use of selected practices, their present economic status compared to what it was before the TFA and their perception of the usefulness of certain strategies used in the approach. Interviews were also conducted with extension officers, researchers, policy-makers, managers of supermarkets, hotels and credit agencies to obtain qualitative data on the functioning and usefulness of the TFA..

RESULTS

Functioning Of the Task Force

The TFA was established in Montserrat in 1984, in Nevis in 1990 and St. Kitts in 1992. The strategies used by the Task Force (TF) in Montserrat and the experiences obtained during its ten years of existence, assisted in guiding the functioning of the TFs in Nevis and St. Kitts. The TF consists of a multidisciplinary team working in an interdisciplinary mode to achieve a specific task in a specified time frame.

The TF brought together several persons from different agencies as a team to address the development of specific commodities. Limited human and financial resources existed at the time in the Departments of Agriculture and there was the need to bring together in a co-ordinated and integrated manner those persons who were involved in promoting agricultural production to prevent duplication of effort. The TF was a mechanism to co-ordinate such efforts and to achieve the desired goals in a more systematic way. Each member of the TF had a specific function to perform and bringing the different disciplines together with the farmer in the field resulted in quicker and more timely corrective actions. The responsibilities of the members of the TF were:

- The Chief Extension Officer, as co-ordinator, was responsible for convening and presiding over all meetings and for co-ordinating communication to and from the TF.
- CARDI was responsible for providing technical leadership to the TF and for co-ordinating all technical assistance and training.
- The marketing officer was responsible for co-ordinating the marketing of the commodities.
- The manager of the Tractor Services/Small Farm Equipment Pool was responsible for land preparation and for co-ordinating the use of available machinery.
- The farmer representative had the responsibility of bringing the views of the commodity producers to the TF and to be directly involved in the decision making process.
- The extension officer was responsible for technology transfer.

Farmers were specially selected to participate in the TF activities in Nevis and St. Kitts. However, the farmers in Montserrat volunteered to be involved. The criteria used for selecting farmers were:

* willingness of farmers to co-operate with the members of the TF,

* farmers interest in producing the selected crop,

- farmers having access to a minimum of 0.75 acres of suitable land,
- availability of water for irrigation,
- agreement to sell produce through the Marketing Division.

The TF was responsible for planning, implementing, monitoring, reporting and reviewing the program identified for the development of specific commodities. The activities of the TF included monitoring the production and marketing of the target crops, monitoring the procurement of inputs for the targeted crops, meetings (TF and farmer meetings), training of farmers and extension officers, production forecasting and providing regular reports on the targeted commodities.

Meetings were held regularly to review and plan the production of the selected crops. The production and marketing plans were revisited and adjusted if necessary. Reports were made about the progress of the crop(s) and problems which arose were addressed. Inputs were procured for the selected crops either by the Department of Agriculture or by the marketing agencies. Inputs were also available from commercial suppliers and some farmers also ordered directly from international suppliers. Whatever the source, the TF monitored the availability of the inputs required by the farmers for the target crops.

A crop management team (CMT), comprised of three persons from the TF, was established to monitor the progress of the target crops on a weekly basis. The CMT gave technical advice to farmers on issues and problems which they experienced in the field, so that timely corrective action could be taken. The CMT was used only in Nevis and St. Kitts. In Montserrat, however, field visits were made at least fortnightly by the entire TF.

Impact Of The TFA

The level of impact varied in each island. The support by Government for the TF was substantial.. For example, in Nevis when a problem developed between the buyer and the TF, the Minister of Agriculture intervened and the problem was quickly resolved. Mechanisms were put in place to effect import substitution, for transporting produce from the farm to the hotels or to storage and for allocating funds to support the programme.

The knowledge, attitudes, skills and aspirations of the target farmers changed. They became more knowledgeable about the improved technical packages of crops such as onion, tomato, white potato, cabbage and melon. These farmers also knew and understood the performance of the different varieties of the above mentioned crops and would indicate their variety preferences to extension officers.

Technology diffused from the target farmers to the non-target farmers due to the close proximity of the farms. Crop production of some non-target farmers improved such that produce from non-target farmers were taken to meet the weekly hotel quotas whenever there was a shortfall in the production of the target farmers. The interaction between the members of the TF and these non-target farmers resulted in improvement in their crop management practices for they had to conform to the required grades and standards.

Several of the practices of the target farmers changed. Farmers used drip irrigation systems instead of depending solely on overhead sprinklers to irrigate their crops. Sequential planting of specific vegetable crops were practised. Speedling trays were used so that specific quantities of seedlings were produced and planted at specific times to ensure reliability of supply. The farmers identified those crops, which they preferred to produce depending on their competence, and then decided when the crops should be planted so that the reliability of supply could be improved on. Farmers planted specific crop varieties based on the market preference.

Other impacts include:

- the formation of strong inter- and intra-sectoral linkages;
- extension, farmers and research conducted joint field visits;
- critical inputs were purchased in bulk and sold to the farmers;
- regional export of a targeted crop was achieved;
- commodity groups and farmers associations were formed;
- improvements in the working relationships between farmers, extension and research; and
- production costs for all the target commodities were reduced, for example, onion production costs were reduced from EC$1.57 to 0.53 per kg within a five year period.

Emerging Issues

From the study, several issues emerged which could be lessons for farmer development within the sub-region. The methodology of the TFA incorporates several elements from other approaches such as the Saturated/CARDATS Approach (see Henderson and Patton, 1985), the Training and Visit Approach, the Commodity Approach and the Package Approach. These elements include training of extension officers and farmers, focusing on target farmers for the commercialization of commodities, providing technical information and other services as a package to farmers and a team approach to the implementation of the programme.

There was a kind of regimentation to weekly farm visits. Training of both extension officers and farmers was conducted regularly. The number of visits that a farmer received from different persons each bringing either the same or a similar message was reduced. The team ensured that production targets were met and always maintained contact with the target farmers encouraging and assisting them in the production and the marketing of crops. The team providing ancillary services to the farmers contributed to the successes. This is similar to the package concept discussed by Adams (1982) where not only are researchers/ extensionists/farmers linked together, but the farmer is linked to a combination of services such as inputs supply, credit and marketing so that his/her farming situation could be improved.

Mosher (1978) listed one of the roles of Extension as "filling the rural vacuum" whereby extension officers help to do whatever needs to be done, that is not done by someone else, so that greater agricultural productivity is achieved. The study revealed that extension officers became the farmers "encouraging companion" to motivate them to adopt. The selection of crops and the focus on a spectrum of changes needed to develop these crops to the point of commercialization also supports Mosher's proposals for accelerating development within the agricultural sector (Mosher, 1971).

In the TF the information generated was fed back into the "information network" so that it could be adequately used. A multi-directional flow of information enhanced this process in line with the writings of Coombs and Ahmed (1975), Roling and Engel (1990) and van den Ban and Hawkins (1996). However, TF tended to function for longer periods than required in Montserrat, and this resulted in the TF losing its focus somewhat, the members losing interest and a loss of synergy in the agricultural knowledge and information system (AKIS)

The forging and maintenance of linkages within the TFA supports the proposition by Rivera and Schram (1987) where within the agricultural development process, the "system of agencies" would function inter-dependently if strong linkages are maintained. This is one of the strong points of the TFA where extension was able to establish formal linkages with research which, in the past, were *ad hoc* in nature. Extension officers and researchers conducted joint field visits and interacted more frequently in problem solving in the field. In the past, researchers were not always present when extension officers visited the farmers and there was the difficulty in operationalizing collaboration between research and extension into action.

In any program, there must be a commitment from government to provide the financing needed to implement the program, and the support given by Government played an important role in the success of the TFA. Efforts should be made by the Department of Agriculture to ensure that these commitments are sustained. This is necessary, for key figures in governments change over time as well as the urgency of issues. By involving farmers in the development process, they could lobby government for meassures that would assist them as the need arises.

Farmers formed associations. These groups would enable the farmers to improve their analytical abilities, develop their leadership skills, become more empowered and take the initiative with the Department of Agriculture playing a supportive role. The formation, development and functioning of associations would serve as vehicles to ensure continued progress within the sector.

Generally, the TFA made a positive impact on the agricultural sector and the successful experiences could catalyse further development within the sector. The approach is workable in situations where resources are limited and the environment in which the farmers function is not complex. The approach would work well in countries that have similar characteristics as Montserrat, Nevis and St. Kitts but the strategies used would have to be modified to suit the local situation.

Elements critical to the successful functioning of the Task Force Approach

Several elements must be in place for the TFA to be successful. These elements include:

1. There must be open communication at all times by all persons throughout the entire process. Any bottleneck in communication can adversely affect the functioning of the process. Feedback at all levels is crucial. Accountability is important to the functioning of the TF.
2. Members of the team must have authority to make final decisions. The TF will not function adequately if final decisions are made by persons who are not a part of the team.
3. The co-ordinator of the TF should be proactive and be responsible for pushing the process along. The persons involved must make a firm commitment of their time, be committed to the decisions taken and show a high level of inter-dependency.
4. There must be strong policy support for the plans made and the actions taken by the team.
5. All experiences must be documented and the public must always be informed of the activities and achievements of the team.
6. The production system should be market-led. Unavailability of markets can easily frustrate the entire process. The knowledge of available markets, their requirements and guaranteed marketing arrangements, are all necessary.

7. Focus should be on specific commodities targeted for development/ commercialization and the objectives of the program must be specific and clearly stated.
8. Institutionalization of the process is critical to its success.
9. There should be a participatory approach to the entire process and farmers involvement and participation is key to success of the program.
10. The system should be flexible to address problems and adjust to changes.
11. Farmers should follow recommended production schedules in order to prevent bottlenecks arising from overproduction and attendant marketing problems.
12. An effective crop forecasting system contributes to the success of the programme.

EDUCATIONAL IMPORTANCE

How best to co-ordinate resources for agricultural development has always posed a serious challenge. Integrated development approaches have been effective but costly and not financially sustainable. The "package approach" has shown some promise but there have been problems in getting the various elements together in a sustained way without significant financial support. The TFA is yet another mechanism that can help in bringing together scarce resources to achieve a desired outcome that would not normally have been possible. However, certain pitfalls must be avoided and thus, key extension guidelines should be followed to prevent any serious backlash. The study reinforces the value of approaches that advocate a systems view in dealing with agricultural developmental issues.

REFERENCES

Adams, M.E. (1982). Agricultural Extension in Developing Countries. Intermediate Tropical Agricultural Series. Essex: Longman.

Henderson, T.H. and Patton, M Q.P (1985) Agricultural Extension for Rural Transformation: The C.A.E.P. Model, in: Rural Development in the Caribbean (ed. Gomes, P.I.), London, C. Hurst & Co., 194-211.

Mosher, A. T. (1971). Agricultural Development. In Behavioural Change in Agriculture, edited by J.P. Leagans and C.P. Loomis. London: Cornell University Press.

Mosher, A. T. (1978). An Introduction to Agricultural Extension. Agricultural Development Council, Singapore: Singapore University Press

Rivera, W.M. and Schram, S.G. (Eds) (1987). Agricultural Extension Worldwide: Issues, Practices and Emerging Priorities. London: Croom Helm.

van den Ban, A. W. and Hawkins, H. S. (1996) Agricultural Extension 2nd ed. London: Blackwell Science Ltd.

ASSESSMENT OF TRAINING PROGRAMME FOR EXTENSION STAFF OF JIGAWA STATE AGRICULTURAL DEVELOPMENT PROGRAMME IN NIGERIA

BY

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ABSTRACT

The paper is in two parts. The first part provides a background information on manpower development, the goal of which is to update and upgrade the skills and knowledge of the human resource in any organisation through relevant training. The overall goal of training is to improve the present and future performance of the extension staffers. In the second part, we discussed the manpower development opportunities provided by the Jigawa Agricultural and Rural Development Authority (JARDA). Although the Agricultural Development Programme (ADP) places premium on manpower development by sponsoring different training programmes for different categories of staff, much efforts still need to be put in place, particularly for the Village Extension Agents.

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Introduction

A strong case can be made for the proposition that one of the greatest dangers to effective Agricultural Extension is the accelerating obsolescence of its human resource, involving all categories of extension workers. Evidence is mounting that the extension worker's ability to cope with his/her ever changing farming systems and technologies is lagging farther and farther behind the changing world. As we move into the 21st Century, we face newer challenges as agriculture becomes more developed, and other socio-economic and technological advancements occur in the production environment. In order to keep pace with these challenges, the manpower needs of extension programme need to be constantly reviewed and updated. The only way out of this phenomenon is to embark on serious manpower development programmes that will retool the extension staff with the competencies required to function adequately. Essentially, manpower development encompasses a programme of activities designed to promote the professional growth of individuals (Dejmozka and Kapel, 1982 quoted by Malone 1984). Employee development and management development are often referred to as manpower development. Employee development is a process concerned with the improvement and growth of the capabilities of individual and groups within an organisation (Rue and Byars, 1980), extension organisation inclusive. This can be achieved principally through training. The goal of employee development is to facilitate the achievement of organisational goals. While management development is concerned with developing experience, attitudes, and skills necessary to becoming or remaining effective managers. Management development can be used to reduce the negative effects of managerial obsolescence which exists when an individual no longer possesses the skills and knowledge thought necessary for current or future effective performance (Glueck, 1978). Management development can take many forms, such as: coaching and counselling, understudy assignments, job rotation, individual self-improvement programmes, performance appraisals, in-house training programmes, as well as training courses and programmes organised by universities and other professional organisations and institutions.

In the ADPs the responsibility for manpower development is domiciled in the Human Resources Programme (HRD). The primary mandate of the HRD programme is to assist the ADP management in identifying the manpower development needs as well as to develop and implement programme activities to address the identified needs. Other responsibilities of the HRD programme are to:

- strengthen the management and technical capability of all staff at all levels through the identification, organisation, and conduct of suitable training, seminars, workshops, study tours and orientation; and
- organise Technology Review Meetings (Monthly/Quarterly TRMs) and Monthly Trainings (Fortnightly Trainings).

Unfortunately manpower development programmes in most agricultural agencies or Ministries are under-favoured. Frequently, manpower development is viewed, particularly by top chief executives as a nicety that is supported only in good economic times but is quickly reduced or eliminated in bad economic times. Such a short term position often causes the organisation to suffer in the long run. In essence, human resource or manpower development should be seen as a sine qua non for the sustainability of the success stories already recorded in our Extension Services in Nigeria.

2.0 Guiding Principles of Manpower Training

Training is a process that involves the acquisition of knowledge, skills, concepts, rules or attitudes. Training is certainly not an end in itself, but a means to an end. And the end is the improvement of the knowledge, attitude, skills and aspiration (KASA change) of staff so that they can effectively perform their respective official responsibilities. Training programme must therefore be well guided by the right principles before its impact can be felt and the huge financial investment involved will be justifiable. Some of the basic guideposts for an effective staff training programme are as follows:

1. Training should be objective oriented. The following criteria should be considered as guideposts in defining training objectives:

    a) training objectives and organisational objectives should be compatible:
    b) training objectives should be realistic;
    c) training objectives should be clearly stated in writing; and;
    d) training results should be measurable and verifiable.

2. Training must be regular and continuous;
3. Its activities should be approached systematically, rather than in a casual or ad-hoc manner, that is, training has to be planned, including the following steps:

First Step: identification of the knowledge and skill required by the staff to facilitate their increased productivity;
Second Step: decide which of the identified skills and knowledge can be improved/provided by training using the Skill Gap Analysis:
Third Step: decide when to teach the skills, who will teach, how it will be taught, and what resources are required to teach the skills. The training plan should also include a survey of relevant institutions that can provide the training;

4. Training courses should meet both academic and technical skill needs of the staff;
5. It should be learner-centred; the approach should be "learning by doing";
6. It should be a two-way communication between the trainer and trainee; and
7. Finally, training should be relevant to the staff and organisation.

3.0 Training Options for Manpower Development

The following training opportunities could be organised by the HRD department in the ADPs for appropriate categories of staff:

1. Induction/Orientation training. This is the training required to be given all new employees to:
    a) equip them with an understanding of their job, organisation procedures and policies as well as a general understanding of the organisation's role in the society;
    b) develop in them a feeling that they are an important part of the organisation/ADP;
    c) reduce initial stress related to performance of their tasks;
    d) identify the resources available to support them in their role; and
    e) strengthen their personal commitment and dedication to the extension audience/clientele (Malone, 1984).
2. Refresher course to be arranged at least once in three years for extension workers to refresh or update their technical and professional knowledge and skills;

3. Special short course conducted at least once every year for a duration of 3-

5 days in a particular sub-sectoral area;

4. Study tour to be undertaken within or outside the State or country by the extension staffers to gain more experience on selected items of interest;
5. Foundation training for about two weeks in areas outside the staffs field of specialization to broaden their professional base and widen their horizon; and
6. Periodical training approximately one-third of the subject-matter-specialists' time is to be spent with researchers to update their knowledge and skills.

Other specialised and regular training opportunities for the frontline field extension workers are : Monthly or Fortnightly Training, as well as Pre-Season and Mid-season trainings.

4.0 Objectives of the Study

The ADPs are therefore expected to organise regular training for all categories of their extension staff. However, there is a paucity of information on the training programmes implemented by the ADPs. The broad objective of this study therefore is to find out the extent of the training programmes offered by JARDA to its extension staff.

The specific objectives are to:

1. Examine the qualifications of the extension staff; and
2. Determine the achievement level of JARDA management in the training programmes oganised for its extension staff.

4.1 Research Methodology

During the 1997 **World Bank/FACU/APMEU** Supervision Mission to Jigawa Agricultural and Rural Development Authority (JARDA), a standardized list of performance indicators for measuring the progress of the ADPs in their manpower training programme was given to the Directors of Extension Programme and HRD Programme to complete. The specific areas showing the targets and achievements of the JARDA in terms of staff development were analyzed in this study using percentages and performance indices.

5.0 Results and Discussions

The Staff Appraisal Report (SAR) stipulates the minimum qualification requirement for the various categories of extension staff. The minimum required qualifications are shown in Table 1

Table 1: Minimum Qualification Requirement for Extension Staff

S/N	Categories of Extension Worker	Minimum Required Qualification
1.	Deputy/Asst. Director	B.Sc
2.	Zonal Extension Officer	B.Sc/PGD
3.	Block Extension Supervisor	HND
4.	Extension Agents (Male/Female)	OND

B.Sc - Bachelor of Science
PGD - Post Graduate Diploma
HND - Higher National Diploma
OND - Ordinary National Diploma

The staff strength and qualifications of the Extension Programme of JARDA as at December, 1997, are depicted in Table 2.

Table 2: Extension Staff Strength and Qualifications in JARDA, 1997

Positions	Qualifications						Total
	M Sc	PGD	B Sc	HND	OND	Certificate	
Deputy Director	-	1	-	-	-	-	1
Zonal Ext. Officer	-	2	1	1	-	-	4
Sub Zonal Extension Officer	-	1	-	7	-	-	8
Block-Ext. Supervisor	-	-	-	7	40	-	47
Extension Agents	-	-	-	-	-	366	366
Area Extension Officer	-	-	-	19	2	-	47
Total	-	4	1	34	42	366	447

Based on the recognition that HND is equated with B.Sc or PGD nowadays by the Federal and State governments, we accept that all (100%) senior cadre of JARDA staff, that is Deputy Director, Zonal Extension Officer and Sub-Zonal Extension Officer met the minimum professional qualification. However, only about 15% that is 7 out of 47, of the block Extension supervisors, (BESs) possess the HND minimum qualification; majority (85%) of them are working with OND. None of the Extension Agents (Eas) has the required minimum OND qualification. All (100%) of them are working with the Certificate in Agriculture qualification. Unfortunately, some of the extension agents are not trainable because they lack the basic entry requirement for admission to the OND programme.

The researchers' concern and fear were allayed by the assurance given by the JARDA management that the performance of the staff was very good and effective because of their long years of field work experience and on-the-job self-training. Inadequate training programme to upgrade the skill of the staff, particularly the field extension agents, was unanimously identified by both JARDA management and field staff as a critical problem.

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Table 3: *Training Programme: Targets and Achievements for 1994-96.*

Training Activities	Unit of Measure	1994		1995		1996		Total		Cumulative Performance Index[1] (%)
		T	A	T	A	T	A	T	A	
Supervisory Staff Training: Overseas	No	6	6	19	19	8	8	33	33 45*	100.00
Supervisory Staff Training:In-country	No	12	12	11	11	12	9	35	32 132*	91.43
EA Training[2]	No.	5	5	10	8	5	4	20	17 436*	85.00

Legend

* Figures in parentheses are the total number of beneficiaries in the specific training activities.

1. Cumulative performance index = Total Achievement
--------------- X 100
Total Target
2. The training programmes exclude the Monthly Technology Review Meeting and the Fortnightly Training.

Data in Table 3 show that all the targeted overseas training from 1994 o 1996 for the supervisory staff were actualized. Forty-five staff members benefitted from such training programmes during the period. While 91% on the in-country training activities planned for the supervisory extension staff from 1994 - 1996 was achieved, involving a total of 132 beneficiaries. Out of 20 training programmes planned between 1994 and 1996 for the Extension Agents, 17 were implemented, representing 85% cumulative achievement. During the review period, a total of 436 extension agents benefitted from one short-term training programme to another.

From the above date, it is obvious that JARDA management has given due consideration to its staff development through regular and systematic training. Both junior and senior members of staff participated in the human resource development programme. However, while about 96% of the total training targets for supervisory staff, both overseas and in-country, was achieved during the study period, 1994 - 1996 only 85% of the training planned for the extension staff was carried out. Higher targets were set for the supervisory staff than for the extension agents, 68 versus 20 throughout the study period.

6.0 CONCLUSION

The most important resource available to any ADP is its staff members. Manpower development programme, especially through systematic training should therefore be given priority by the ADP management. Such training can be achieved through regular short or long term programmes, including in-house, in-country and overseas training.

The JARDA experience of manpower development towards the sustainabilty and effectiveness of its extension programme was studied. Between 1994 - 1996, 68 training (both overseas and in-country) were targeted for supervisory staff and 65 of them were actualized, representing about 96% achievement. During the same study period, JARDA achieved 85% of its training targets for the extension agents. The achievement is commendable. However, emphasis should be given to the training of the extension agents, being the front line manpower and the "finger-tip" of the ADP, responsible for carrying the improved agricultural technologies directly to the farmer.

7.0 Recommendations

Based on the findings from the study, the following five recommendations are proffered; including;

1. JARDA management should embark on long term OND and HND training programmes, respectively, for the EAs and BESs to upgrade their professional and technical competencies.
2. The EAs without the entry requirement for the OND programme should be given an ultimatum, say two years, to remedy their academic deficiency.
3. Effort should be made by JARDA management to ensure that its staff members obtain the minimum qualifications as spelt out in the SAR. The changing role of extension particularly under the Unification of Agricultural Extension Services (UAES) requires that all Extension agencies should embark on massive training and retraining to meet the changing challenges of the 21st century.
4. JARDA management should carry out follow-up contact to the training beneficiaries to determine the relevance and application of their training.
5. Finally, training beneficiaries should share knowledge and skill gained during their training with colleagues through organised workshop, seminars, etc.

REFERENCES

Glueck, William F. 1978. Personnel: Diagnostic Approach. Dallas: Business Publications.

Malone, V. M. 1984. In-Service Training and Staff Development. In: Swanson, B.E. (ed) Agriculture Extension: A Reference Manual, 2nd edition, Rome: Food and Agriculture Organisation of the United Nations.

Rue, Leslie W. and Byars, Lloyd L. 1980. Management: Theory and Application (revised edition). Homewood, Illinois: Richard D. Irwin, Inc.

POSTERS - 1999 AIAEE CONFERENCE

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POSTER ABSTRACT

ISLAND FOOD SYSTEMS: EXPERIMENTING WITH APPROPRIATE CURRICULUM. David Dolly, University of the West Indies, Saint Augustine, Trinidad and Tobago.

A new course AX35: Island Food Systems (IFS) was conducted at the University of the West Indies during Semester I of the 1998/99 academic year. It is the end result of a large network of Faculty exchanges among partner institutions and a testimony to the progress of International Development work in Agriculture. Such activity has moved from single room offices at Universities to expansive networks even on one campus.

Since 1996, the University became partner to a project entitled ISLE: Island Sustainability, Livelihood and Equity. Other members are Lester Pearson Institute, Dalhousie Technical, Nova Scotia Agricultural College of Canada, The University of the Phillipines, Central Vizayas and Hassanudin University, Indonesia.

A two and a half-year interactive, international process emerged with a course syllabus which the University's Academic Board approved. The process involved international workshops, faculty and student exchanges and contributing multidisciplinary expertise. Lester Pearson Institute manages the activity through funding from the Canadian International Development Agency.

IFS is an enriched mix of interactive pedagogy and engages the students in mini workshops, field visits, role playing exercises, seminars, lectures and group discussions. It would occur within a typical half yearly University Semester. Faculty staff from partner institutions visited the campus in order to conduct three training modules, an introductory session and a concluding session. The modules are Food Security, Health and Nutrition, Land and Water Use Conflict. During the concluding period the students must relate their experiences and come to terms with issues of Island Sustainability, Livelihood and Equity.

Challenges engage trying to mix and mingle cultural differences, language communications of numerous island dialects, academic scholarships and a new generation of students gullible to appropriate learning experiences for Island States.

Students were motivated by the comparative analysis of different island states. They felt their development perspectives had become broadened. They rated the course as one of their best learning experiences at the University.

The course will remain as an offering in the final year undergraduate and first year postgraduate training at the University.

Desert Roses--Blooming Across America

http://ag.arizona.edu/desert_roses/

Billye Foster
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University of Arizona

How It All Began: *"To know someone, here or there, with whom you feel there is understanding in spite of distances or thoughts unexpressed--that can make of this earth a garden."* *--Clara McBride Hale*

Ninety-two percent of American public school superintendents are men. Similar statistics could be reported for higher level positions in agricultural education. Although many agricultural education programs report enrollments of greater than 50% female students, few remain within the profession. Why this disparity? It could reflect the limited number of female role models in all levels of the educational field. In 1987, Ohio recognized the need for support groups for female teachers. At that time a project, funded by the Ohio Department of Education, was designed to assist female agricultural education teachers develop support groups and networking skills. Although the number female professionals within the field has continued to grow nationally, it reflects a lack of critical mass when compared to their male counterparts.

In August of 1996 the first issue of *Desert Roses* was mailed to the female agricultural education professionals in Arizona. Designed to be a pro-active 'support' letter, Desert Roses framed a communication network for the women involved in agricultural education in Arizona. The original group included 21 teachers, 2 administrators, and 1 secondary level counselor. The newsletter is mailed quarterly and has grown to include student teachers, graduate students, extension personnel and industry professionals that hold degrees in agricultural education. In August 1998, an introductory issue was mailed to women in Colorado, Utah, Nevada, Idaho, Montana, Wyoming and Oregon, further increasing the mailing list size. The November 1998 issue was sent to female members of the **Association of International Agricultural Extension and Education (AIAEE).**

How It Works: At the December 1997 NAERM meeting in Las Vegas, conversations with female teacher educators stimulated the idea that contact could be expanded. Now, thirty-four teacher educators across the country receive the hard copy of *Desert Roses.* They, in turn are able to copy it for any interested teachers in their areas that do not have Internet access.

Currently the newsletter is produced through desktop publishing programs (Microsoft Publisher), and printed in-house in the Department of Agricultural Education at the University of Arizona. Due to financial constraints, it has become apparent that hard copy mailings might not be the most efficient way to connect female teachers. The creation of the *Desert Roses* Web Site has opened the door to teachers across the country. As of February 24, 1998, a fully functional web page site was available to teachers. Although this concept had already been introduced in earlier issues, the March 1998 issue was dedicated to the explanation of the site and how to best utilize it. This technological opportunity allows access to many more interested professionals.

Results to Date: Since its inception, Desert Roses has been in a continual state of revision! A variety of columns have been tried, discarded or kept, or perhaps utilized at differing times. Teachers and subscribers are invited to submit their own success stories regarding techniques used in classroom, SAE and FFA activities. Through the web site, we have been able to open new doors reaching out to women across the country. By utilizing a Bulletin Board we can provide a venue for regular communications between female teachers in the profession. In addition to motivational quotes, a more practical aspect is seen through the inclusion of Lesson Plan links and Bell Work ideas. The web site is update monthly.

Costs/Resources: Currently, there is no outside support for this program. Initial printing expenses have been absorbed through the Department of Agricultural Education and the few paid subscriptions from out of state. Still there is a growing need for hard copies of the newsletter. In addition, it is hoped that the web site might be utilized to gather pertinent data for research. For these reasons we are currently seeking outside funding. It is hoped we will be able to fund graduate student research relating to females in the workforce of agricultural education as well.

A PROTOTYPE THREE-DIMENSIONAL MODEL FOR ASSESSING INTERNATIONAL AGRICULTURAL AND ENVIRONMENTAL LITERACY

Jack Elliot, Associate Professor
The University of Arizona

Knowledge and understanding of agriculture and the environment have been of major concern, especially since the release of "Understanding Agriculture: New Directions for Education." (National Research Council, 1988) The purpose of this project is to implement Phase 2 in continuation of "Identifying and Understanding Consumers' Agricultural and Environmental Issues" by developing a literacy model to assess depth of knowledge and understanding of international issues and to distinguish effective formal and nonformal modes of education.

The employment of a three-dimensional model for representing multi-attribute criterion was established by Dr. Charles E. Osgood, linguistic psychologist, in 1957. The purpose of his model was to provide a way by which semantic differentiation of concepts could be physically illustrated, i.e., realistically plotted and represented within a three-dimensional grid system called the semantic space. It is the basic concept of Osgood's three-dimensional model which serves as the archetype for the proposed literacy model. The axes of the proposed model correspond to Osgood's axes and arerealistically depicted in Figure 1.

Levels of Learning

The proposed model employs an hierarchical order of learning levels based upon the version posed by L. H. Newcomb and Marilyn Trefz in 1987. Taking Dr. Benjamin Bloom's Hierarchy of Learning, Newcomb and Trefz assigned nontechnical terminology to the learning levels and collapsed Bloom's Comprehension, Application and Analysis classifications under one order: Processing. The new levels are 1. Evaluating; 2. Creating; 3.Processing; and 4. Remembering.

International Agricultural and Environmental Themes

Since 1988 the state of California has funded and supported public school agricultural literacy programming. This resulted in the establishment of Framework for Agriculture, a literacy strategy for grades K-12, which includes the following five themes:[1] 1. Food and Fiber Systems: Understanding Agriculture; 2. Historical, Cultural, and Geographic Significance; 3. Science: Agricultural-Environmental Interdependence; 4. Business and Economics; and 5. Food, Nutrition, and Health. These themes provide the broad topics under which all international agricultural and environmental issues are to be categorized in the proposed model.

Formal and Nonformal Educational Sources

Beginning in 1976 the W. K. Kellogg Foundation and other agencies encouraged incorporation of education on agriculture, food, and natural resources in the public and higher education curriculum. Recent research has found that student populations **and** other populations of consumers can acquire information through influential nonformal education sources. Such sources include: publications (books, newspapers, magazines, trade journals), audiovisual materials, communications media (radio, television), government agencies (Cooperative Extension, chambers of commerce, etc.), workshops, presentations, resource centers, visitor centers, museums, zoos, gardens, parks, special events, fairs, outreach programs, clubs (FFA, 4-H, hobby, outdoor recreation, etc.). The list could easily be extended.

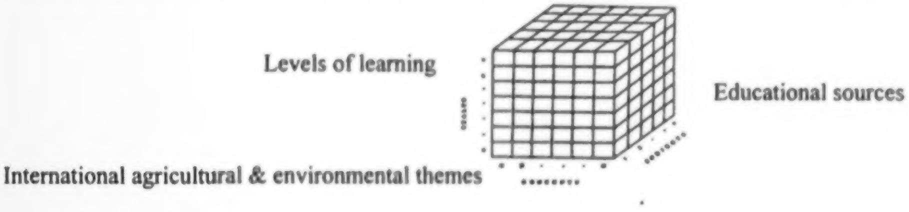

Figure 1. Concept of the rectangular solid showing the correlation between Osgood's Differential Semantics axes and the International Agricultural & Environmental Literacy Model axes.

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[1] A sixth theme recognized by the California Agriculture Literacy Framework, Career Pathways, does not lend itself to the literacy model being developed, therefore is not included.

Promoting healthy development among rural Zimbabwean youth: A collaborative applied research project

Presenters: Sherry Betts
Glen Earthman

Abstract:

Since regaining their independence in 1980, Zimbabwe has emphasized education for their young people. The present cohort of graduating secondary school students were among the first to have access to public education throughout their school careers. During the summer of 1996, surveys were conducted in a number of Zimbabwean communities in order to assess the behaviors, beliefs, and attitudes of local adolescents. Due to the limited extent of research on adolescents in Zimbabwe, the present study was intended to be primarily exploratory. Basically, we were interested in determining what factors were relevant for healthy development among Zimbabwean youth.

Research involving youth from western nations have led to the identification of several factors thought to 'protect' youth from undesirable developmental outcomes. For example, parental monitoring has been frequently cited as a protective factor for youth (Hawkins & Catalano, 1992). The role of these protective factors may or may not be consistent across cultures. In this study, we examined the relationship between various environmental factors and both desirable and undesirable behavioral outcomes among youth in a rural Zimbabwean community.

Data were collected through the use of a self report questionnaire, devised through a collaboration between local community members and researchers at the University of Arizona. The final survey was comprised of 140 items designed to assess the beliefs, attitudes, and behaviors of Zimbabwean youth. The anonymity of responses was emphasized in order to protect student confidentiality and to increase response accuracy. The final sample was comprised of 472 youth. Boys and girls were evenly represented, and most (93%) of the youth were between the ages of 13 and 17.

Due in part to the lack of extant literature on youth in Zimbabwe, the present results were best interpreted through the use of descriptive data. A variety of predictor and outcome variables were included in these analyses. Both desirable and undesirable outcome variables were considered, including scaled measures of delinquency (alpha = .83) and social involvement (alpha = .72). In addition to descriptive data, logistic regression analyses were utilized in order to assess the relative predictive power of various factors on youth behavioral outcomes. For all but one of the behavioral outcomes studied, parental support was the most powerful protective factor for these youth. The one exception was a highly significant ($p < .001$) association between current school grades and plans for education beyond secondary school.

The results of these analyses seem to imply that some factors related to healthy development for western youth may also be related to healthy development among rural Zimbabwean youth. The consistent effects of parental support were particularly impressive. These results have provided a substantial base of information for local school and community leaders. Beyond the direct interpretation of these results, it is also important to consider the broader implications of this project. Given these findings, implications for programming and cross-cultural research issues are also discussed.

Where Are The International Jobs?

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Introduction: College students, high school students, extension agents and other professionals often ask about opportunities for international employment. Most of us have trouble finding answers to the questions. We usually pass the inquirer on to someone in "employment" or the office of international programs. As advisors for college students interested in international agriculture, the authors were frequently asked how to find international jobs. As a result they have attempted to identify employers of students in international agriculture. A list of organizations, agencies and businesses was developed and a survey was sent to collect information. A "Reference Guide to Global Career Opportunities in Agriculture" was printed in 1989 and updated in 1992. The guide was incomplete at the time of its release and it is now out of date. AIAEE members need to be involved in updating this guide and in sharing its benefits.

Purpose: This poster exhibit challenges AIAEE members to work together to construct a new, more extensive, guide to international jobs. It provides a process and deadlines for those interested in helping to develop the guide over the next twelve months.

Presentation: This interactive exhibit includes several parts. The question (challenge) presented is: "Are you willing to help develop an AIAEE guide to international employers?" Sample pages from the 1989 and 1992 job guides are displayed. A questionnaire at the exhibit will determine who is interested and how they are willing to be involved.

Method: To construct the employment guide, using AIAEE volunteers, the following process will be followed. 1) Develop an expanded list of potential employers (using the 1989 guide as a base). 2) Develop a standard summary sheet. 3) Survey potential employers. 4) Print the results in a 2000 guide to international jobs. 5) Distribute the guide at the AIAEE Conference in 2000.

Educational Importance: The job guide developed through this participatory process would be very useful in helping advise college students interested in international employment. It could also be used in college courses dealing with international agriculture and extension. It could help AIAEE to interface with many groups that are not now aware of our organization. In this way the influence and credibility of AIAEE could be enhanced. A guide to international agencies would also help AIAEE members to find opportunities for consulting and research.

Abstract for Poster Session: Design and Launch of the PUNJAB HORTICULTURE POSTHARVEST TECHNOLOGY CENTER

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Recent field visits and published literature have documented the continuing high level of postharvest losses for fruits, vegetables and floral crops in India, reported to range between 30 to 50 percent of farm gate value. Produce generally moves through the postharvest system without the aid of cooling or protective packaging. The occasional produce that goes into cold storage emerges with a high incidence of decay and chilling injury. Fruits arrive at the wholesale market in an under-ripe or over-mature state, and vegetables are wilted and damaged by delays in transport and unloading and by rough handling. These postharvest losses represent real losses of income to India's small-scale growers and traders, losses of produce quality, shelf life and nutritional value to consumers and a loss of income to the government marketing boards which charge fees based upon produce value. As India's most agriculturally progressive state, Punjab has taken the initiative to move into the arena of horticultural development, and has identified postharvest technology as a key focus area for the state's agribusiness development policy framework.

The OBJECTIVES of a year-long project conducted during 1998, funded by USAID (through Chemonics International's ACE-India Project) and the Government of Punjab were:

1) to develop a strategic plan for a the design and launch of a new research and extension center
2) to design the process whereby the stakeholders could review and comment upon the results of a preliminary survey on needs and concerns and prioritize choices offered for the design, administration, staffing, funding, structure, goals and objectives of the Center.
3) to build upon the existing strengths of the partners, and identify weaknesses to be targeted for training efforts,
4) to establish linkages with other postharvest institutions and sources of postharvest information worldwide

METHODS: There were five groups targeted as stakeholders. Phase 1 involved sending introductory letters by mail to 75 persons identified as key stakeholders by ACE and surveying a wide range of these individuals via face-to-face interviews. Phase 2 of the design process provided an opportunity for all the stakeholders to read and review the ideas and suggestions of the others, give verbal and written feedback, and to make preliminary selections from some of the many choices offered by interviewees. At this point, a steering committee, composed of internal stakeholders and a preliminary industry advisory committee (composed of external stakeholders of government and university administrators, progressive farmers, exporters and representatives of funding bodies) were established to coordinate and streamline the decision making process involved in designing and establishing a Center and choosing a leader (Director of the Center, Dr. A.S. Dhatt).

RESULTS and CONCLUSIONS: There were many goals and objectives suggested by interviewees, and it was important that during the discussions and feedback sessions that consensus be reached on which goals should be given priority. The goals that were deemed most important included: a) being truly responsive to the needs of the horticultural sector in India, b) building and strengthening linkages with major sources of postharvest information and technology in India, Europe, Israel and the US, as well as c) creating awareness and increasing knowledge about postharvest technology via training courses and demonstrations for farmers and marketers.
Important initial preparatory activities included 1) "training the trainers" at governmental agencies, universities and horticultural extension centers in Punjab; **2) establishing modern communications linkages** via e-mail and the internet; **3) developing written and illustrated information on appropriate, cost-effective postharvest horticultural practices** for the Indian economy and environment; and **4) developing guidelines for applied research and demonstration efforts** targeting the specific needs of the Center's clientele.

EDUCATIONAL IMPORTANCE: This project serves as an excellent example of how to use participatory methods to gather information on needs and concerns from clientele and other key stakeholders, and to provide adequate time and schedule formal activities for the purpose of interaction, discussion and feedback in order to achieve consensus on goals and objectives. The successful launch of this Center in was the first step in acheiving India's goal of reducing perishable food losses and improving farm incomes for small-scale growers. The first "Training the Trainers" programs were held for PHPTC staff in July 1998, and their first Industry Short Course was held in August 1998. Plans have been made for the PHPTC staff to visit the University of California, Davis for additonal training in postharvest technology during the Spring of 1999.

Reaching Out: Appreciating Hispanic Culture and Learning the Language

by

Ruben D. Nieto, Urban Programs Unit, Ohio State University Extension
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Introduction

Extension professionals in Ohio indicated a need to better understand the Hispanic culture to more effectively reach targeted audiences. In addition to a lack of understanding of the Hispanic culture, the professionals noted their inability to speak the language, even simple greetings or phrases. To address these concerns, a workshop was created for Extension professionals working in Ohio's urban counties. The main objectives of the workshop were to: a) identify Spanish-speaking countries, b) review national, state, county demographic profiles for Hispanic populations, c) compare and contrast the Hispanic culture with the different cultures of the participants, d) address some of the unique aspects of the Hispanic culture, and e) learn basic Spanish greetings and phrases. Two workshops have been conducted involving 35 Extension professionals. A follow-up session was developed at the request of the Extension staff attending one of the first workshops. The objectives for this session were to review Spanish greetings and phrases with actual Hispanic clientele and design a flyer in Spanish to announce a program targeted for Hispanics. In addition to Extension, a workshop was conducted with 60 professionals from the Ohio Diabetes Association; employees of the Girl Scouts of America and Women, Infants, and Children (WIC) have also requested the workshop.

Purpose of the Poster

The poster is intended to highlight the objectives of the workshops, to provide a brief summary of the workshop agendas, to illustrate via photos the various workshop activities, and to feature participants' reactions to and comments about the workshops. The poster displays the following information: a) objectives of the workshop, b) workshop agendas, c) laminated language card used by participants, national, state, and local statistics on Hispanic populations, d) photos of Latin foods and meals and workshop activities, e) comments and reactions from participants, and f) a list of resources for further study.

Educational Importance

As Extension's clientele base changes and expands, professionals need additional training in understanding and appreciating other cultures and languages. The Hispanic portion of the U.S. population is expected to increase during the next several decades and will represent 14% of the population by the year 2010. To effectively address the needs and concerns of non-traditional audiences, Extension professionals need to have basic language skills and an understanding of the diversity within the various Hispanic cultures. The development of the workshops is one way to help Extension professionals gain the confidence and expertise needed to reach out to Hispanic audiences in the county. The workshops are also intended to serve as models for similar efforts focusing on other non-traditional Extension audiences.

The Classic Models of International Extension Education

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Introduction: Every AIAEE member should have access to brief descriptions of the "classic models" of extension education. Academics need to know these classic models when they teach courses on extension education, particularly if the course touches on international concerns. Representatives of international educational organizations need to understand "what has worked" and "what has not worked" in terms of international extension education. Otherwise, how can they provide support for local educational programming? Administrators and managers of educational programs in local settings around the world need to understand why other programs have succeeded or failed so they do not repeat the same mistakes or ignore past successes.

Each AIAEE member will have certain biases and gaps in understanding models of international extension education. Collectively we can overcome those biases and gaps to develop a list of classic models and write descriptions that are brief but touch on key aspects of each model.

Purpose: This exhibit should stimulate discussion and gather a wide sample of opinions among AIAEE members concerning the important models of international extension education.

Presentation: Descriptions of the authors' choices of the most important "classic models" will be displayed. Criteria for choosing the most important models will be on one poster. Key questions will be posed to stimulate response from participants at the poster session: 1) Do you disagree with any of these choices for the list of most important models? 2) Do you have other selection criteria to propose? 3) Do you have other models that should be on the list?

Major Points: What is "extension education"? What are the most important models of extension education on an international scale? How do we identify the most important models? What can we do with this information? The Authors' List of Most Important Models includes: US Land Grant Cooperative Extension; Farming Systems Research and Extension; Training and Visit Extension Model; Private Extension; The Thessaloniki Farm School; The International Institute for Rural Reconstruction; Animacion Rurale; The US Peace Corps; ACPO (radio assisted learning) in Colombia; and the UMASS/USAID adult education project in Ecuador.

Educational Importance: The identification and systematic description of the most important models of international extension education will allow educators to fill the gaps in their own experience and education. It will allow them to compare the models with each other. This knowledge will help in the preparation of research proposals and the development of educational programs that avoid the mistakes of the past and build on the successes. It will help in consulting and program evaluation. Descriptions of the models will help those who teach courses on extension, international education and agricultural education.

Administering Programs of Nonformal Education

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Introduction: A short "commentary" article on the competencies of administrators in nonformal education was recently published in the *Journal of International Agricultural and Extension Education* (Etling, 1998, 5[3], 61-64). This article was based on a diagram, developed by the author, which describes those compentencies. Reviewers of the article found the diagram to be very stimulating and encouraged the author to expand the article. One reviewer thought that a handbook or text on administration in nonformal education should be developed. Another reviewer thought the article opened discussion on research needed in administration of nonformal education.

Purpose: This poster was designed to stimulate discussion on the competencies of administrators of nonformal education programs. It identifies priorities for research on administration in nonformal education. It also identifies appropriate uses (applications) for the diagram. It should help shape the next steps in the development of a paradigm for administrators of nonformal education programs.

Presentation: This interactive poster session features a poster-sized example of the diagram. It also includes a similar diagram developed by R. A. Mackenzie for the Harvard Business Review. The differences in the two diagrams should stimulate discussion on the differences in administrative competencies between business and education and between formal and nonformal education. Questions are posed, via posters, that include the main points detailed in the next section.

Main Points: Are certain competencies needed by all administrators? Are there differences in administration of business and educational programs? Are different competencies required of administrators of programs in nonformal education as compared to formal education (schools)? How can this diagram be used for selecting, training, and evaluating administrators.

Educational Importance: A better understanding of the competencies of administrators in nonformal education could help everyone involved in those programs. It could guide search committees to be more objective and thorough in considering candidates for administrative positions. It could guide professional improvement and staff development for administrators. It could be used in courses which teach about managing extension and other similar organizations.

India Retrospective: 1956-58
USAID International Cooperative Venture in Extension Education

by

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Abstract

In the 1940's and early 50's India's approach to accessing developing agricultural technology was to send promising individuals to other countries to study, assuming those individuals would return to share their newly gained knowledge with rural populations. Unfortunately, this approach proved less than effective due to social stratification and the reluctance of many of the trained individuals to return.

In an effort to meet the increasing need for agricultural development, the Government of India entered into a cooperative venture in 1956 with the US Agency for International Development and five Midwestern Land Grant Universities. The purpose of the venture was to establish extension education programs to transfer modern agricultural production and food technology to Indian farmers. As a part of the joint venture, the University of Illinois was assigned to the North Central District of India, principally the states of Madhya Pradesh and Uttar Pradesh. Bill Tammeus, University of Illinois Agricultural Extension Advisor, was appointed to provide leadership to the project in this region.

Tammeus' project experience is documented in detailed narrative, photographs and artifacts, providing an accurate and informative picture of international extension education efforts in 1956-58 India. The purpose of this poster presentation is to share this documentation. Specifically, the poster describes how the project originated, was organized and funded; project objectives and implementation; challenges and their solutions; cultural relationships and philosophies shared by Indian farmers and project personnel; and outcomes.

With the theme, "Revisiting Extension before the 21st Century", this poster provides participants to the 1999 Conference of AIAEE relevant and significant insight into early international extension education development efforts and offers valuable lessons for future endeavors. An anonymous author wrote, "If we do not know where we have been, how can we know where we are going?"

Agriculture & Rural Development in Ireland: A Study Abroad Program

Julie Tritz
Project Coordinator, MATRIC
Iowa State University

Purpose. 'Agriculture & Rural Development in Ireland' is a collaborative effort between the Department of Sociology and International Agriculture Programs at ISU and includes a 16-week course learning about agriculture, rural development, the history, culture, and politics of Ireland, followed by a 12-day program in May. The purpose of this poster presentation is to share ideas and resources in developing a study abroad program.

Results. A successful study abroad program takes time—nearly one year to plan. The process includes a site visit, recruiting students, and designing the curriculum. The following is a look at each aspect of this process and will offer insight into what Iowa State University and the College of Agriculture has done to promote and encourage study abroad programs.

Site Visit. Faculty and staff at ISU are eligible to receive financial support for an initial site visit. The site visit enables arrangements for lodging, local transportation, historical and cultural visits, and internship possibilities, as well as academic visits for the entire group. Monies have been allocated for faculty and staff to conduct site visits as well as conduct the actual study abroad program. The site visit to Ireland included visits to: 1) three leading universities in Ireland to meet with rural sociologists and rural development specialists; 2) two LEADER programs in Ireland—Ballyhoura and West Cork, which are two of nearly 30 European Union funded initiatives aimed at encouraging rural and community development; 3) agricultural production, processing and research facilities and; 4) Údarás na Gaeltachta in Co. Galway, one of five *Gaeltachts* in Ireland, which aims to promote Irish language and culture through social, cultural and economic development. These visits, among others, helped identify places of academic, cultural and historical interest that will be included in the May program

Student Recruitment. Fliers were posted, brochures created and emails sent to all students in the College of Agriculture (targeted students = 2,907-Fall 1998 enrollment). An informational meeting was held early in the semester with a follow-up meeting just prior to the site visit in November. A follow-up meeting was held in December to share experiences from the site visit.

Curriculum Design. To optimize the learning that takes places, a 16-week course (Spring 1999) is required. The purpose of this course is to provide students with a comprehensive perspective on the relationships between agriculture and rural development in Ireland. Prior to the program in Ireland students will be exposed to the major forces that have shaped agriculture and rural development in Ireland as well as the US. Utilizing a cross-cultural comparison approach will provide students a deeper understanding of how socio-cultural forces affect farming and rural society, and conversely how farming systems and rural values shape how individuals view the world. Students will meet once a week for 2 hours and will be evaluated on three components: attendance and class participation, a research paper and presentation, and a journal documenting their thoughts and in-sights from each lecture and activities in Ireland.

This entire process aims to enhance the student learning process and continue as another example, set forth by the College of Agriculture at Iowa State for quality study abroad programs.

USDA-Vayots Dzor Marz, Armenia Program Planning Needs Assessment

Mary Lou Carlson, Peoria, Illinois mary_lou_carlson@hotmail.com

Introduction

The United States Department of Agriculture in Armenia was involved in facilitating a needs assessment for the Agricultural Support Center in Vayots Dzor Marz. Agricultural Support Center's (ASC's) are a new outreach education office system that houses extension, information, marketing, and research representatives. A Marz is a geographic area similar to a state or a region. Vayots Dzor Marz is one and a half hours south of the capitol of Yerevan.

One component of this needs assessment process was a questionnaire. The purpose of the questionnaire was to determine the farmer profile and situation, past means of technical and educational assistance, problems perceived by the farmers, ways farmers want help and on what issues. Based on the results, the ASC will develop their individual and integrated program of work.

The newly selected staff of the Vayots Dzor Marz was greatly involved in the development, collection, and analysis of the questionnaire. Realizing a sense of ownership over the questionnaire allowed the information collected to be recognized as more valid and useable. And training in the development, interviewing, and analysis of the questionnaire gave the staff applicable skills.

Research Method

Actual random surveying was done with of 3 percent of the population. 465 farmers were interviewed in 5 days with 13 interviewers. SPSS and Excel computer programs were used in the data analysis.

Data, Results, Conclusion (5 page report)

465 farmers surveyed– 3 percent of the population.

Conclusions- This questionnaire information was used as one of the sources in developing the 1999 Vayots Dzor ASC Marz Program of Work. Some of the program directions are:

- Developing a farmers association to market fruits
- Provide marketing education for meat producers
- Seek sources to pilot a cattle artificial insemination project
- Start a commodity price collecting and reporting system

Educational Importance

One part of determining program planning priorities is a needs assessment questionnaire. Having the local staff involved in the questionnaire development, trained in interviewing techniques, responsible for interviewing clientele, learning and helping perform the formal and informal data analysis process will give them ownership over the questionnaire results.

A TRUE STUDENT EXCHANGE PROGRAM BETWEEN VIRGINIA TECH AND UNIVERSITY OF ORANGE FREE STATE IN SOUTH AFRICA

By

Phil Fravel, John R. Crunkilton, and John M. White
Virginia Polytechnic Institute and State University

Introduction

The need to internationalize higher education curricula has gained momentum since the early 1990s and much progress has been made to accomplish this goal. One avenue to accomplish this internationalization has been through study abroad or student exchange programs. While a true-life experience in another's culture and geographical setting is perhaps the most effective way to develop students' international awareness and international experiences, it is perhaps the most difficult goal to achieve and implement of the internationalizing possibilities.

Purpose of Poster

The purpose of this poster is to explain the background, procedures, and results of the first student exchange program between Virginia Tech and the University of the Orange Free State in Bloemfontein, South Africa. Special attention will focus upon the steps which led to a successful exchange program: the preliminary exploration of each other's campus; the development and formalization of written agreements between the universities; development of mutually agreeable procedures regarding registration, tuition, housing, and governmental clearances; the actual exchange of students; and formative evaluation of the program.

Poster Presentation

This poster presentation will include visual panels explaining the various steps leading to the successful exchange program. In addition, materials and forms related to publicity, student applications, photographs, and program evaluation will be displayed.

Conclusion

This exchange program is in its first year. In fall 1998, 11 South African students and a faculty member traveled to Virginia Tech and completed their fall studies. This spring, 7 Virginia Tech students and a faculty member traveled to South Africa to spend a semester on their campus. This program has truly internationalized the curricula at both campuses and as the program continues, it is expected to attract more students who would like to begin or enhance their international awareness and experiences.

African Home Economics Extension Educators: New directions and Challenges for the New Millennium (21st Century).

By

1. Anna E. Mudukuti: Grad. Student (Ph.D.) Human and Community Resource Development Dept (Extension Education). The Ohio State University.

2. Mbula Mbole: Grad. Student (Ph.D.) Education, Policy and Leadership (Cultural Studies) The Ohio State University.

Introduction

We are now living in an era of rapid change, of which humanity has never encountered before. In other countries Home Economics has assumed new directions and responsibilities, centered on aesthetic and functional relationships primarily in the context of their middle-class households (FAO, 1994). There is increasing poverty, food insecurity, rural-urban migration, poor health and environmental degradation in sub-Saharan Africa. Within such a context, Home Economics Extension Educators should aim at empowering rural women to improve and enhance the living condition of rural households. Home Economic Extension Educators in sub-Saharan African countries have largely ignored, bypassed and neglected the needs and priorities of rural households. The primary goal is to assist rural households manage resources effectively. The role of rural women in Sub-Saharan Africa could be classified into broad categories thus (1) Producers and (2) Managers. These are the areas Home Economics Extension Educators should focus on, in order to enhance rural household standard of living. Rural women contribute tremendously to food and agricultural production, childcare, and management of household sources. Therefore, play a critical role in determining and guaranteeing food security and the well being of the entire household.

"The Evolution of a Performance Measurement System in a Complex of Partnerships Involving Agricultural Research and Extension"

by George W. Mayeske, Ph.D.
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In 1993 the U.S. Congress passed the Government Performance and Results Act. It attempts to improve program management, performance and accountability by focusing more intensively on outcomes. It requires every agency that receives Federal funds to: develop a five year strategic plan linking its mission with broad goals and objectives; indicate how specific performance goals are related to them; specify indicators of accomplishment and set annual, numerical targets for them; and, report annually on their accomplishment, also numerically. This poster describes the evolution of a system designed to meet the requirements of this law in a complex of partnerships called the Cooperative State Research, Education, and Extension System, (CSREES). The first phase involved the development of a unified system for both research and extension focused around five broad goals that encompassed 13 subgoals and some 135 quantitative indicators on which numerical targets for attainment were to be set annually and for which accomplishments of them would also be reported annually. Review and test of the proposed system with the partner institutions showed that while research could not meaningfully specify and report on quantitative indicators, extension could do so even to a greater extent for some outcomes than was at times proposed. As a consequence, in the second phase a dual system is being used and refined in which research will use qualitative indicators that often span many years while extension reports annually on plans and accomplishments using a quantitative, numerical framework. Examples of indicators that are currently in use as well as those that were eliminated are given as are the reasons for their elimination.

Youth Need Global Citizenship Education

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Introduction: Education abroad, particularly through youth exchanges, can provide powerful learning opportunities which affect attitudes of participants for the rest of their lives. The International Farm Youth Exchange program (now called International 4-H Youth Exchange, IFYE) and exchanges with Japan are the primary 4-H exchange opportunities. The literature, however, has lacked substantive documentation of the impacts of these exchanges. Beyond the exchanges a comprehensive, coordinated curriculum is needed for global citizenship education for youth. Few nonformal educators outside 4-H understand the current or potential significance, to youth around the world, of 4-H's curriculum in education for global citizenship.

Purpose: The purpose of this paper is to describe 4-H global citizenship as a curriculum.

Presentation: The poster will describe why youth need global citizenship education. It will describe aspects of the 4-H curriculum in global citizenship education including IFYE, the Japan exchanges, *And My World* leaders' guides published by the National 4-H Council, a project guide called *Learning About Japan,* and materials from state 4-H programs.

Major Points: Over 35,000 Japanese and 6,250 4-H youth have been on the summer exchange since 1973. Since 1989, 613 Japanese youth completed a year in a US high school. In 1997, 40 states sent adult volunteers to the annual state coordinator conference. Acquisition of useful knowledge, attitudes, skills and aspirations was documented through written evaluations and interviews with participants. Youth mentioned the development of skills in communication and personal money management most frequently. Attitudes of self-confidence and appreciation of their own country were the most frequent changes documented. For host families, the most frequently mentioned practice change was the improvement in sensitivity and communication within the family as a result of hosting. Evaluations of exchanges also uncovered problems to be addressed. Expense is still a barrier to wider participation. Many state 4-H staff, who have had little contact with the program, still perceive them to be too expensive and too restrictive. Other learning opportunities are needed and curricula are evolving.

Educational Importance: While 4-H has been exported and adapted in over 70 countries in all regions of the world, the model has not always met with success abroad. Part of the 4-H program's success depends on US culture and institutional arrangements. Parts of the 4-H program, like global citizenship education, however, have the potential to address and overcome cultural differences and provide youth and their families with the life skills they need to be successful global citizens. If nonformal educators can learn from the strengths and weaknesses of 4-H global citizenship programs, they can design and refine nonformal youth education in other countries that can have greater impacts in resolving the issues facing youth development, community development, and national development.

Broad-based Partnerships for Research and Extension: The Experience of the CFTU Network in the Philippines, Terry Tucker, Cornell University, Ithaca, New York

Introduction

Broad-based partnerships can facilitate joint action among primary stakeholders (farmers and communities) and secondary stakeholder institutions (NGOs, government agencies, universities and other research institutions). In turn, this joint action can increase the benefits for research and extension users (Farrington and Bebbington, 1994).

Conservation Farming in the Tropical Uplands (CFTU) is a collaborative network of 16 organizations, centered in the Philippines, which includes development-oriented NGOs, government agencies, international research centers, and academic institutions. It seeks to assure the long-term viability of upland farming communities and the protection of their increasingly stressed environments by improving agricultural productivity, promoting ecosystem conservation, enhancing farmer and community incomes and security, illuminating social and gender issues, and facilitating exchange of knowledge among farmers and between farmers and others.

Purpose and Presentation

Organizational evolution and learning has characterized CFTU since its 1992 inception. The resulting organization is more diverse in its membership, and driven less by university interests and resources and more by community-defined issues and problems. Member interaction increased members' understanding of the complex interplay between rural poverty, environmental degradation and declining agricultural productivity. The NGO members called upon the academic and research institute partners for support as they began to address complex concerns, such as watershed and protected area management, and play new roles, such as facilitating community participation on local government boards and committees. The resulting collaboration has yielded new roles and capacities among all members organizations, effective approaches and institutional frameworks for research and extension, and lessons about broad-based partnerships.

Pictorial, graphical and narrative elements combine to illustrate how CFTU seeks to integrate research with community-based action, build local capacity for leading agricultural and rural development, and link the research and development communities with local and national leaders for constructive policy dialogue. Available will be selected abstracts of recent research, descriptions of current research and extension activities, as well as reports and contact information for CFTU member organizations.

Educational Importance

Operating alone in complex, resource-limited rural environments, most institutions encounter limitations in their own capacity or institutional mandate that severely constrain effectiveness. Yet, conflicting mandates and differing conceptualizations about rural development often prevent diverse organizations from working effectively together. CFTU offers some hope and lessons for emerging partnerships among diverse organizations.

Trinidad Conference Program

Trinidad, Hilton Hotel.

Sunday, March 21

All day	Self-arranged educational activities
4:00-6:30 p.m.	Early registration

Monday, March 22

7:00 a.m.	Registration
9:00-11:30 a.m.	Opening session (Remarks by AIAEE leadership, and UWI and Trinidad-Tobago officials; Keynote address)
1:00-3:00 p.m.	Concurrent paper presentations
3:30-5:00 p.m.	Business and committee meetings
5:00-9:00 p.m.	Reception, Poster session, Silent auction

Tuesday, March 23

9:00-11:00 a.m.	Concurrent paper presentations
1:00-3:00 p.m.	Concurrent paper presentations
3:30-5:30 p.m.	Concurrent paper presentations
6:30 p.m.	Cultural evening and dinner (Caribbean music, featuring a steelpan group performing several expressions of this artform in one of the authentic panyards in Port of Spain. The steelpan is made from a discarded oil drum shaped and musically fashioned to produce melodious tones. It is considered the only new musical instrument of the 20th century).

Wednesday, March 24

9:00-10:30 a.m.	Business meeting, paper/poster presentation awards
11:00-1:00 p.m.	AIAEE awards luncheon, Best paper presentation
1:30-6:00 p.m.	Educational tours [choice of UWI St. Augustine campus; food production cooperative; Caroni Bird Sanctuary (birdlife, reptiles and mammals); Asa Wright Nature Center (rainforest, birds). Other tours are being explored].

Tobago Conference Program

Dr. David Dolly, Coordinator

Tobago, Grafton Beach Resort

Thursday, March 25

Morning	Arrive in Tobago
2:00-6:00 p.m.	Field trip (Small food producers' collective and marketplace – interact with growers and policy makers; Tobago Plantations – a new complex being built on an old sugarcane plantation along a beach front to preserve wetlands and the original biodiversity, and showcase primary agriculture activities; Visit typical school for children 11-18 years or discuss extension work visit with local extension officers).

Friday, March 26

9:00-9:30 a.m.	Opening (remarks by Tobago representatives and AIAEE leadership)
9:30-11:30 a.m.	Panel "Extension Systems Experiences" Caribbean Extension, Past and Future Extension in Developing Countries Extension in Developed Countries
1:00-3:00 p.m.	Panel "Issues in Extension" Infrastructure and Support Issues Philosophical Issues The Future of Extension
3:00 p.m.	Conclusion of 1999 AIAEE Conference

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